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GLEANINGS IN BEE CULTURE

A JOURNAL
DEVOTED
TO BEES
AND HONEY
AND HOME
INTERESTS.

ILLUSTRATED
SEMI-MONTHLY
Published by THE A. I. ROOT CO.
\$1.00 PER YEAR
MEDINA, OHIO

Vol. XXIII.

NOV. 15, 1895.

No. 22.

STRAWS FROM DR. C. C. MILLER.

I'M RIGHT GLAD A. I. Root is on the sick-list.

VOGEL scouts the idea of crossing *Apis dorsata* with the common bee. [Who said they could be?—Ed.]

WEYGANDT finds that virgin queens are fertilized sooner if taken to a distant apiary than if left at their own home.

THANKS to Bro. Poppleton for light given, p. 807. He encourages me to think that my scheme outlined on p. 740 may possibly work all right.

IN ENGLAND they have been having trouble in some law cases to decide whether or not beeswax is a drug. Not much of a "drug on the market," anyhow.

WILL A YOUNG QUEEN make her bridal excursion so long as unsealed brood is present? Gravenhorst says he has never known it to occur except in a single instance.

THE BEE CLOVER that I asked about Sept. 15, L. P. Cousins writes he has grown for years. "When once seeded it will seed itself like caraway; will scent your whole garden."

RAPID FEEDING. The slower this can be done the better, provided there is time. I find from experience that rapidly fed stocks are generally weak in the spring.—*Apiarist* in B. B. J.

THE GREAT VARIATION in the weight of bees given on p. 800—from 3000 to 10,200—will be better understood when it is mentioned that the 10,200 bees in a pound were brought to the starving-point.

I SAID I WAS GLAD A. I. Root was on the sick-list—not that I wish him harm, but he's hunting up some useful things that the rest of us can have the benefit of; and if he'd stayed well and strong he never would have thought of them.

L. P. COUSINS writes that he has wood-base foundation in a number of hives, and the combs are as fine as could be desired. One's sympathies are aroused for the family of the inventor, who is now hopelessly insane.

MY LITTLE PATCH of crimson clover looks quite green the first of November. Sown with oats in spring it bloomed pretty well, and I supposed would be dead long ago; but I don't expect it to stand the winter.

HASTY says in *Review* that "a hive needs a visible number on it no more than a toad needs a tail." Which makes me think, in view of the confidence I put in Bro. Hasty's judgment, that I may have underestimated a toad's need of a tail.

A STRAW on page 800 says, "I have thousands of sections filled with foundation." Certainly not a remarkable statement, but please add to it something like this: "three or more years old that I expect the bees to accept all right next year."

I DON'T KNOW about that opinion "that the beginner had better commence with the small hive." Too much danger he'll let his bees starve, unless, indeed, he uses the small hive two stories. [I don't know—I don't know but you are right.—Ed.]

I FIND some excellent hymn tunes written by E. E. Hasty—same name as the one who writes such wonderfully bright reviews in *Review*. I suppose it's the same man. [That Hasty is an all-around genius, and a lover of the really beautiful in life.—Ed.]

GRAVENHORST says you could not make a worse mistake than to try to winter on combs entirely filled from top to bottom with sealed honey. [It would be bad policy; but there are, in my estimation, many worse things that could be done.—Ed.]

IN REPLY to my question, "What constitutes too large a colony?" friend Hand says, p. 809, "Too many bees." That throws a flood of light upon the question. Now will he kindly tell us how many he thinks "too many"? [We will leave friend Hand to answer.—Ed.]

IN GERMANY the Koehler plan has been practiced with some success in controlling fertilization. Put the queen with the selected drones in a nucleus, keeping them in the cellar all day, and let them fly after 5 o'clock. Repeat daily till successful.

CRIMSON CLOVER, says a writer in *B. B. J.*, is only now getting in America the reputation it has long had in England as a honey-plant; but he says they've also found out its honey is by no means first-rate. [I suspect it will do better in England because the climate is milder than here.—ED.]

S. JORDAN relates in *B. B. J.*, that, after transplanting pyrethrum-plants, he attempted to handle his bees, but they came at him in such shape that he "hastened" from the field. He washed his hands and returned to the bees, and the viragoes of three minutes before were now gentle as sucking doves.

THINKING OVER friend Hatch's answer, p. 810, I'm inclined to think the $\frac{1}{2}$ -inch space between the two stories may have had something to do with his queens not going up and down. My bees went up and down all right this year, with about the same conditions, only mine had only $\frac{1}{4}$ -inch space to cross. [Yes, there is the difference.—ED.]

LOOKS A LITTLE as though A. I. Root was to have a rival in B. Taylor as a high-pressure gardener. Bro. Taylor says in *Review* that his honey crop is a failure, but he has a bountiful crop of almost every thing on a half-acre of land. Some fair crops on my land this year, too, but I didn't raise them. Nor a crop of honey either.

FOUNDATION-FASTENERS, says C. W. Dayton in *Review*, instead of having the melted wax run to the rear end of the plate and drop off, should have it run to the front edge and drop off on the section. The extra melted wax would fasten the starter more firmly, but in some cases it might cool too slowly. The present fasteners make pretty solid work though.

B. TAYLOR reports in *Review* that he made 250 sheets of foundation without side walls—sheets thin, and rolled so as just to shape the cell-bottom—and put in wired frames; they made model combs of straightness and beauty. [Don't doubt it; but it was a waste of wax. Foundation with *good side walls* and a *thin base* is much cheaper per square foot, and is just as good.—ED.]

I'M NOT MUCH of a novel-reader; but when I got hold of the new book, "How to Get Well and Keep Well," I acted like one, for I just let all my work go and read it right through without stopping. If you want to know all about the Salisbury treatment, by all means get the book. Whether you care for the treatment or not, you'll get some excellent ideas from the book.

MRS. EDITH MILLER, editor of the *Kansas Bee Journal*, is a clipper. At any rate she makes good work clipping paragraphs from the bee-journals and massing them under the title, "What Others Say." [Yes, indeed, Mrs. Miller is a success as a clipper of good things. There are other good things in her paper besides, although it is only a youngster.—ED.]

THE EDITOR of the *American Bee-keeper*, a ter attending the Toronto convention, says, "Any one can find fully as much to interest

in almost any single copy of any of the bee-papers as was heard during the entire convention." Pretty poor convention that, measured by some of the bee-papers. [The editor of the *A. B. K.* has not been at bee conventions enough, or kept bees enough to form a proper opinion, I suspect.—ED.]

YORK AND HUTCHINSON are favoring a trial of having the North American meet at the same time and place as the G. A. R. That would make low rates sure, and we can stand almost any inconvenience if we can only have railroad rates low enough. [I am with York and Hutchinson. In order to get any kind of attendance we must have it held where low rates will be secured independent of the bee convention. This $1\frac{1}{2}$ fare business, as Hutchinson says, amounts to nothing.—ED.]

GERMANS are sometimes prodigal of words, but in one case at least they are more economical than we. Instead of saying a plant "yields honey," they just say the plant "honeys." I wish we had such a verb. [Bee-keepers, or, rather, editors of bee-papers, might do much at simplifying our nomenclature, without offending good taste or obscuring the meaning. For instance, Langstroth recommends the words "queen" and "unqueen" as verbs; and S. T. Pettit would use "floor" instead of bottom-board, and "bar" instead of perforated metal. GLEANINGS will be glad to assist.—ED.]

THE SUBSCRIBERS of GLEANINGS are fewer than I supposed, if each one can have a pound of potatoes out of that five barrels—see p. 819. [Look here, doctor, I did not say that every subscriber to GLEANINGS could have a pound of potatoes out of that five-barrel lot. Didn't I say in plain English, "If you do not want to take the trouble to get a subscriber to GLEANINGS, make some of your friends, who you think would be interested in it, a present of it for one year, and we will send you the pound of potatoes"? My offer was made in order that we might get GLEANINGS introduced into families or neighborhoods where it has never been before. Of course, the one who sends us a new name must be a subscriber to GLEANINGS himself. Then I added, if it was too much trouble to hunt up a new name, make somebody a present of it. Very likely I did not make it as plain as I might have done, but I think you

will understand it now. One friend sends us \$10.00 (for 10 lbs. of potatoes), with two new names, and says for the other six, "Send me GLEANINGS six years." Oh dear me! I was afraid all the while I should get into a muddle. Now I will tell you: if any of you want to subscribe away ahead we will put it this way: You will want to take GLEANINGS for 1896, most of you, any way—at least I hope so. So we will call that settled. But if you can not get a new subscriber anywhere around you, then just send us \$2.00—half of it for 1896 and the rest for 1897—and we will mail you the pound of potatoes, and you need not do any hunting. By the way, doctor, if I had my way about it I would tell just how many subscribers to GLEANINGS we do have, every issue. But some of the younger Roots think it is not customary, and perhaps not exactly business-like. I will tell you, however, in strict confidence, because you are an old friend, that we have somewhere between 9000 and 10,000 paid-up subscribers just now.—A. I. R.]

CALIFORNIA ECHOES.

By *Rambler.*

Dr. Miller is such a musical man that it seems "Stray Straws" is a misnomer. How would it do, doctor, to change the name to "A Harp of a Thousand Strings"?

Mr. Dosch, on page 737, describes just the way I used to feel after a disastrous wintering of bees in York State. Remedy, pull up stakes, and pull for the bee-keeper's refuge, California.

Later.—If Mr. Dosch lets his neighbor Shaw (see page 770) get so far ahead of him, with only three intervening miles, Dosch had better stop in Arizona.

On page 739 Dr. Miller brings out the idea that lifting heavy hives is a work that some people can not do. I found a case here a few days ago where a threescore-and-ten bee-keeper of feeble frame had shortened his L. hives several inches in order to bring them within his lifting powers. A jumbo hive may be the thing, but it must be a permanent institution, like a house or a barn.

Did you notice what Prof. Verlinden said on page 737, about churning honey? That's just the trick I tried several years ago. I used a quart fruit-jar, and operated the dasher by a slack pulley on a belt from an engine. I could keep the churn going all day. I think it did hasten granulation; but, professor, we want a machine to *prevent* granulation. Can you help us?

A little further along Prof. V. says of a bee-keeping specialist, "He buys much honey of strangers which he *manipulates* before he sends it to its destination." Well, well! with what *sang froid* he says it too! Tell a bee-keeper in

this country that he *manipulates* his honey, there'd be a little dust, a little blood, bruised hat, torn coat, and the best man on top.

Mr. D. A. Wheeler, of Riverside, who owns about 1000 colonies of bees, and has produced about 55 tons of honey during the past season, soon leaves for Chicago, where he will establish a house for the sale of California honey. Mr. Wheeler proposes to pay cash for all of the honey he handles for other parties. The present ruling price here is 3 to 3½ cents for extracted honey, and 8 to 9½ for comb, and but little demand at those figures.

It seems that we want *Apis dorsata*, and then we don't want her. Now I have a plan. When Uncle Sam gets ready to send me rambling after Miss Dorsey I'll sail right off into the Pacific Ocean till the bee is caught, then plant a few colonies on the Sandwich Islands, to see how they stand "furrin" parts. If they are desirable for the islands, of course they would be for California, and could be wafted to our shores. No patent on the foregoing, and the route is open to all contestants.

PICKINGS BY THE WAY.—NO. 1.

By *Skylark.*

INTRODUCTION.

Some people here call me the "literary giant," and others an "idiotic giant." Besides, there are still others who say I have the "big head." The two latter classes have a large majority. The term "giant" refers entirely to the large amount of undeveloped intellect stored away in my mind, and not at all to my person, which is not over ordinary size, and very *elite* and distinguished. When one aspires to high literary honors, the public wants to know who he is and whence he came. I sent my brother to the Mexican war, and he whipped the Mexicans. My father was in the war of 1812, and whipped Great Britain. My grandfather would have whipped the Tripolitans in 1804 if he and two other lieutenants had not voluntarily blown themselves up. They took a fire-ship into the harbor of Tripoli, loaded with 100 barrels of powder, to blow up and burn the enemy's shipping. Being discovered and overpowered they voluntarily set fire to the powder and blew their enemies and themselves into the air. Congress passed a resolution of sympathy for the families of these "noble men," and advised all their noble descendants to follow their example.

Now, I love my country. I love the old flag, and I love Congress, and I want to obey it. Do you, Mr. Editor, know any easy way that a man could blow himself up and not get hurt? The only way I can think of is to go to war in GLEANINGS, and I shall be blowed up often enough, I suppose, and Congress will be satisfied.

Did you ever see a mule try to kick himself to death with the agility, perseverance, and self-determination that Bro. Dayton evinces on page 729? He is actually trying to do that very thing. I do not intend to reflect on his moral character. The mule is a gentle, docile, patient, and useful animal—when he is good. But with all these excellent traits he is not to be depended on as a bosom friend. I say this with deep regret, for I once had a mule that I slept with—about forty yards off. Neither do I intend to reflect on his (brother Dayton's, I mean) intellectual abilities. He may have an intellect *almost* as stupendous as my own, but—but I have my doubts.

I only wish to illustrate the eagerness with which he rushes on to self-destruction. When a professional bee-keeper asserts "that half the honey that leaves this coast is adulterated with glucose," can he blame outsiders for taking up and echoing the cry? This is the wildest assertion I have seen in any bee-paper for a long time. It is not only *not true*, but, at the present price of extracted honey here, it is absolutely ridiculous.

Glucose is not produced on this coast. It must be brought from the Missouri River. It could not be made here with profit, where corn meal is retailed at $2\frac{1}{2}$ cents per pound. I suppose glucose would cost 2 cents per pound; freight overland, $1\frac{1}{2}$ cents; drayage at both ends of the line, handling, and mixing, at least $\frac{1}{2}$ cent more. Then each 120 pounds of glucose would take a new case and cans—say 80 cents more. This would run the cost up to $4\frac{3}{4}$ cents, while pure honey could be shipped at $3\frac{1}{2}$ cents. Even if glucose could be bought for one cent a pound, the mixture would still cost as much as pure honey. More than two million pounds of extracted honey have been sold on this coast this year for $3\frac{1}{2}$ cents; and even now they are offering only $3\frac{3}{4}$. No large house could stand up under such transactions as friend Dayton describes. No house of that kind would last more than one year. Moreover, it would not be a financial success unless they would *steal* the glucose. I know they have not done that. I am sure of it. I am known in San Francisco to be the most successful remover of large quantities of goods, when the owner is not there, that there is on the Pacific slope. None of the large honey-shippers have made application for my services.

I do not believe that one case of honey in 20,000 that leaves this coast is adulterated. No double-geared idiot, standing on his head, would think of it. Really, I believe the man wants to blow himself up. Look here, Bro. Dayton, don't you do it. I am the only man in all these United States who has the authority of Congress to blow himself up for the good of his country and his fellow-men. Don't you do it. I don't want to see you shot, imprisoned,

fined, and hung! Look at the awful prospect before you. Look at the court, the crowd, the scaffold, and the grave!

The latter part of Bro. Dayton's letter is an absolute wail of agony against the retail grocer for selling sugar too low and honey too high—against the Spreckles monopoly, the county supervisors, town councils, merchants, adulterators, etc. Bro. Dayton, if you survive the catastrophe I have indicated above, why not get aboard of a Kansas cyclone and run the whole "bilen" of them down?



RAMBLE 143.

By *Rambler*.

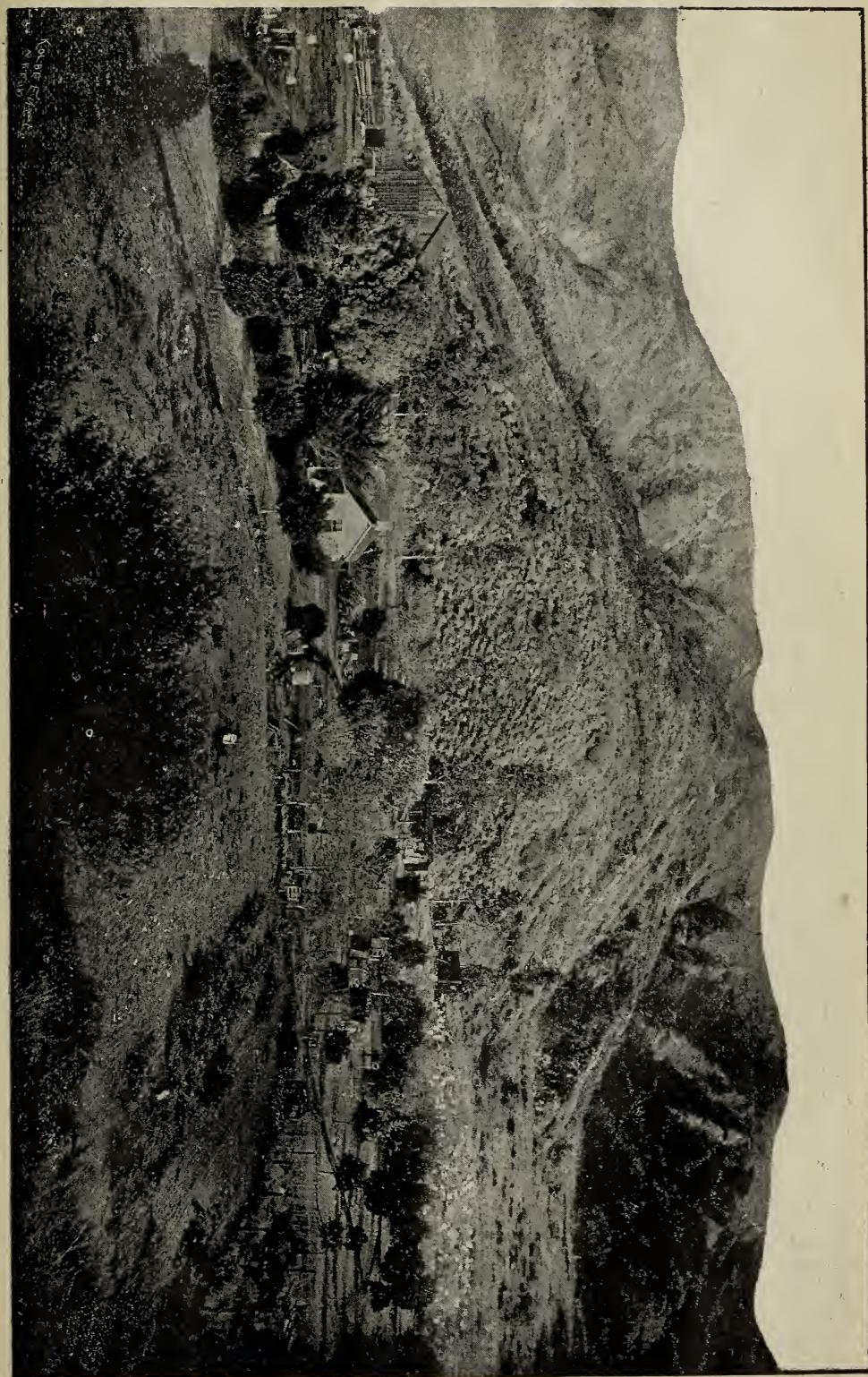
On the 6th of December we entered the tail end of the Sanfracisketo Canyon, and our ponies put us many miles toward home, for we were on the down grade all day. Mountains hemmed us in; wild scenery; side canyons, rugged cliffs; winding glades, and finally a nice stream of water, a branch of the Santa Clara River.

This is a good honey-producing canyon, and we often caught a sort of panoramic view of an apiary as we whirled along. They were not in a high state of order; things were tumbled around as though a brace of bears might have been turned loose among the hives.

The locality is certainly wild enough and lonely enough to suit the most hermit-disposed bachelor.

The last apiary we passed, we learned afterward, was owned by Mr. Mercer, of Ventura. The wind could whistle through every thing on the plantation, and we noted that the honey-house was well ventilated. The view from the highway was highly satisfactory to our curiosity, and we kept right on our way, and camped that night under the broad-spreading oaks just out of the town of Newhall.

The rains descended that night; the wind blew; the thunder rolled, and we had a hard time keeping our tent from going over the trees. Our sleep was of the restless order, and we were happy to see the morning break, with prospects of fair weather. Just six months before we had crossed the San Fernando Pass, and it was then arduous climbing; but now, after the heavy rain of the night, we feared rough roads, and we were not disappointed. Our wagon swayed through wash-outs and over debris; and we had gotten well down the other side, and were congratulating ourselves that the worst was passed, when we came to a little stream of water running quietly across the



MOSES R. CHANDLER'S FRUIT-RANCH AND APIARY, SAN FERNANDO APIARY, CAL.

road. It had been a torrent during the night, and had left quite a space of soft mud or quicksand in the road. The ponies plunged into and through the mud. Our wagon reached the center, and the mud and quicksand closed around the wheels, and we were firmly locked against further progress. Progress was our watchword, and the whip was applied to the ponies for a desperate pull. Result, a broken whiffletree. Our progress was from bad to worse.

Just at this moment a traveling emigrant family, with a prairie-schooner outfit, came up to us. They kindly loaned us a shovel and ax. Wilder cut a big lever, and I shoveled and he pried. As fast as I could take out a shovelful, another shovelful of soft quicksand would take its place. We spent some time in this delightful exercise, with our feet in mud and water, without satisfactory results.

Then it commenced to rain—a real smart mountain shower; it pelted us thoroughly; the water zigzagged down our spinal columns, and everybody, even the horses, looked and felt their unlimited disgust.

But wait! It rained enough to send a little stream of water down the road behind our wagon. It runs parallel to the right-side wheels of the wagon, and, as sure as you live, it is washing the quicksand and mud away from them. Quick now! With the shovel we divide the little stream and run half of it to the other wheels, and in a few minutes the wheels are all washed free. The shower passes; the ponies are attached to the end of the pole, and out goes our wagon with a rush. A bailing-wire mends our whiffletree, and, after an hour's vexatious delay, we are able to proceed upon our journey. The shower feature of our mishap, which we looked upon with such disgust, proved to be our best friend. Parties afterward told us that we were very fortunate to have the shower, for in like mishaps they were obliged to take their wagons apart and dig the wheels out with a pick.

Moral.—In this journey of life, many times what we consider misfortunes are our best friends. So let us learn to be cheerful, not repining under any circumstances, however dark and forbidding they may appear.

Sweet are the uses of adversity,
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head.

That night, after a long and forced drive, we halted at the residence of Moses K. Chandler, at Dundee, 13 miles from Los Angeles. We rejoiced that we were now over all of the mountain ranges, passes, and canyons, and under the roof of a hospitable bee-keeper. We had been in wet clothing all day, and we made good use of the kitchen stove for getting rid of surplus moisture.

Mr. Chandler has a pleasant home, as shown in the accompanying half-tone. It is close into the foot-hills that border the San Fernando Valley. Fruits of many varieties, both great and small, are successfully grown, and 130 colonies of bees help to swell the revenues of the ranch. This is one of those ideal locations I love to find—a location where the bee-keeper and his family have a permanent residence near the apiary. Mr. Chandler gets excellent yields from his apiary; and, living so near the great and prosperous city of Los Angeles, and, furthermore, being somewhat of a salesman, he finds a ready and remunerative market for his ranch products—green fruits, dried fruits, nuts, honey, and an occasional load of vegetables.

The reader will observe through the photo that the ranch has a prosperous appearance; but at this writing, some months after the



CHANDLER'S HELPER.

photo was taken, Mr. C. has prospered so much that he is building a fine modern residence upon the site of the little white cabin. Mr. C. has an efficient helpmeet in the house, who keeps things well in hand for whatever business may come along. A young lady is stopping in the family, who has taken up the manufacture of tin cans for honey. She first made the cans for Mr. C.'s honey crop, and succeeded so well in wielding the soldering-iron that scores of cans were turned out for the neighboring bee-keepers, and the miss does not aspire to be what is called a "new woman" either.

Another very faithful helper on the ranch is Chinaman Hop Lee. He has been with Mr. Chandler for several years. A few years ago, when there was much excitement in this State in relation to the employment of Chinese, a notice was served upon Mr. Chandler, commanding him to discharge the Chinaman. Now,

Mr. C. was born among the cloud-capped granite hills of old New Hampshire, and he did not propose to turn off one foreigner at the command of other foreigners, and had the independence to say so. Things looked a little squally for a while, and Hop trembled in his brogans; but Mr. C. stood firmly by his word, and the Chinaman Hop still eats rice with chop-sticks in the little cabin shown in the photo, between the apiary and the residence.

In an interview with Hop in relation to bee-stings he said, "Him blee heep stling; heep stling Mr. Chandler; heep stling horshes; me no like him; me stlay in tturn honey-extractor; get heep honey; pleek thro wire windlo; slee Mr. Chandler get stlung; me ha-ha; him slap his hands; him no swear like some Melican men. Mr. Chandler heep good man; me no swear too. Me feel heep comfble in honey-house."

We camped over Sunday with Mr. Chandler, and found them to be good Salvation Army people. The daughter, holding the position of lieutenant, is earnestly holding out the rescuing hand in the various places to which she is assigned in Southern California.

Early Monday forenoon we turned into the San Gabriel Valley, and saw in the distance the snow-capped peaks of the San Bernardino range of mountains. Our ponies here caught some enthusiasm. They evidently knew the landmarks, and put in a good day's travel on the home stretch, and in the early evening of the 11th of December we arrived at the residence of our friend and near neighbor, Mr. Clark, and considered our journey at an end.

For six months our home had been, in every sense of the word, migratory. New scenes and experiences had been our pleasure from day to day; and even after six months of it we were loth to return to the quiet every-day duties of every-day life.

When we repaired to our respective bachelor's cabins we were for a time oppressed with a sense of dullness. During the many rainy days that followed we felt decidedly more comfortable under a shingle roof than we did under the dripping tent roof. Then the raindrops brought consoling thoughts of big honey-yields for the coming season.

No man is born into the world whose work Is not born with him; there is always work, And tools to work withal, for those who will; And blessed are the horny hands of toil.

Our work is to produce honey. Our tools are the busy bees and the hives. In preparing them for the prospective good season, dullness soon left our cabins, and the imagined pleasures of producing tons of honey took possession of us.

Though our work did not produce the horny hands, it was blessed with good results, the account of which will appear later.

THE NORTH AMERICAN AND THE UNION.

SHALL WE HAVE LARGE MEMBERSHIP AND SMALL FEE, OR SMALL MEMBERSHIP AND LARGE FEE? WHY WE SHOULD HAVE THE FORMER.

By Dr. C. C. Miller.

I'm looking for good to result from the action at Toronto with regard to the North American and the Bee-keepers' Union. Rev. W. F. Clarke is right in saying the North American has always been local—at least nearly right—and it always will be mainly a local affair just so long as it is so managed that only those who attend have any inducement to become members. So far the effort has been to secure attendance, not membership. That must be entirely changed if it is ever to be any thing more than a local affair. When comparing the membership of our societies with that of societies across the sea, it has been the custom to say that the great distances in our country preclude the possibility of having a large membership. That's all bosh. A man may be a member without attending; and if he doesn't attend, it's just as easy for him to become a member a thousand miles away as a hundred.

But I confess I don't understand Mr. Clarke when he says the North American has always been a "primary class of bee-keepers." I wish he would explain what he means. Is it the character of the men who have been in attendance, or is it the character of the discussions and deliberations that makes him classify it as he does? If the latter, what change would he recommend to make it "a high court or parliament of bee-keeping"?

MEMBERSHIP FEES.

At Toronto, Mr. Clarke said of the North American, "When we get down so that we have to pay only 25 cts. a year I don't want to belong to it." Why? I think both Mr. Clarke and myself have got down so we don't have to pay even 25 cents a year. Is that any reason we do not want to belong to it?

Mr. Newman thinks nothing will kill a society sooner than an insignificant membership fee. A small fee doesn't seem to have killed the many societies in foreign lands. What do we want of a fee larger than sufficient to pay expenses? He says, "The Bee-keepers' Union is respected, not because it has a membership of 300 or 400, but because it has a good bank account." Part of that is true. It is respected for its bank account, and that respect is neither increased nor diminished by the fact that the amount in bank came in large or small sums. But the intimation that numbers count for nothing is hardly correct. An organization of 1000 receives, as a rule, more consideration than one of 100. Now, suppose the membership is increased from 300 or 400 to 600 or 800, and the membership fee cut in two, leaving the bank account the same, will not the larger membership

with the same bank account have just a little more respect?

BUCKWHEAT HONEY VS. SUGAR, FOR WINTER.

A correspondent having extracted buckwheat honey from unfinished sections, and needing to feed for winter, wants to know whether it is better to feed the buckwheat honey or sugar. If I had the buckwheat honey in brood-combs all ready for use I'd use that for winter food rather than take the trouble of extracting and then feeding back. But if I had extracted buckwheat honey, with sugar as it now is in price, I'd sell the honey and feed sugar—all the more if the honey was extracted from unfinished sections, for in that case it would most likely be unfinished honey, and not the very best for winter stores.

A QUESTION OF MOVING.

The same correspondent is in a little doubt whether it is better or not to move his bees to a new location. Where he is in Pennsylvania, the lindens have been mostly cut off, and pasture is getting scarce, except that some fifty acres of crimson clover have been sown within reach this summer. A location with which he is familiar in Virginia abounds in linden-trees that were loaded with bloom the past season.

Leaving out all questions except what is best for the bees, I think I'd take my chances on the Virginia territory. Linden rarely fails, and at its best is an immense yielder. Crimson clover is as yet an unknown quantity. Even if it be found that it will succeed perfectly in Pennsylvania, and if, too, it be found that it yields well, it will still be an uncertain quantity, for it must be sown annually; and whatever may be the amount sown this year, you've no guarantee that an acre will be sown next year, while your lindens are there as a fixture, and at the worst will be only gradually cleared away. Then, too, if the same amount of the crimson clover is sown every year, a large part of it may be plowed under as green manure; and of what use would that part of it be to the bees? The most reliable part will be that used for raising seed, and that is not likely to be large. I don't want to throw cold water upon the expectations as to crimson clover. I hope much from it; but when it comes to comparing chances between that and linden, with our present knowledge crimson clover is nowhere.

ROBBERS.

I had a little scrimmage with robbers this fall. It was at the time we were taking away from the bees in the home apiary all lower stories, some of the lower stories having considerable honey. A few frames, which we carelessly supposed to be entirely empty, but with a little honey in them, were left standing by a tree. When I first noticed the bees at work on them I thought it best to leave them, as there was only a little honey in them; and taking them away before the bees had emptied them and *realized* they were empty would only set the robbers at

work on the nearest hives. Whether these combs were directly to blame I don't know; but at any rate the next day I found lively times at No. 82 near by. I went and got some hay—not a few spears, but a whole armful—threw some loosely at the entrance, and then kept adding till the entrance and the entire hive was covered. Then I got buckets of water and thoroughly wet down the hay, and left the bees to their fate. I left the hay for a week; but there was no appearance of robbers shortly after the hay was put there. When I looked into the hive a week or so later I found a good colony there; but the robbers had emptied the three outside combs before they had been stopped. If they had not been meddled with I think the colony would have been ruined. No. 19, in the opposite row, was having a little trouble with robbers at the same time, but I didn't think it would amount to much. I didn't notice it till a week or two later, when I found it empty of honey, with the queen and a dozen bees. If I had given it a good feed of hay it might have been saved.

SWEET CLOVER HEAVED BY FROST.

On page 643 A. I. Root says of sweet clover, "It is never heaved out by the frost. So far as I am informed, the frost has never yet been able to budge a root of it after it had made one season's growth." I think you forget, friend Root, or else you overlooked a report that I made in GLEANINGS a few years ago. It will be easier for me to repeat it than to hunt it up and refer you to it; and, moreover, it may be worth more now than when first written, for I think more sweet clover is being now sown.

I had a piece of ground carefully prepared in the spring, the soil being made very mellow. It was sowed with oats, then with sweet clover. The sweet clover came up thick. The spring following I went with a good deal of interest to see what the sweet clover was like, and was very much surprised to find no living plants. I think there was not a single one. Plenty of dead plants were there, lifted bodily up by the roots. A point perhaps worth noticing was, that the plants were all small, not more than half the size that plants usually make in hard ground in the first year of their growth. So I conclude that adversity is good for sweet clover, and that the seed does best in hard ground.

Marengo, Ill.

[I think you have answered it yourself, friend M. The seeding was too heavy. A single plant of sweet clover on any kind of soil, no matter how poor, if there are not too many other sweet-clover plants all around it, will make such a growth, providing it has the whole season, that it is almost next to impossible for it to be heaved out by the frost. All along the ground beside the railroad which has recently been cut through my garden there are plants about as thick as they ought to stand; and I have never yet seen one thrown out by the frost; while alsike, red clover, and other plants, are frequently heaved up clear on top.—A. I. R.]

Our Symposium on Wintering.

The Subject Reviewed by a Few of the Prominent Bee-keepers who Have been Successful in Wintering for Many Years back.

ESSENTIAL CONDITIONS; THE MODERN OUT-DOOR AND INDOOR PLANS FULLY DESCRIBED; PACKING; UPWARD AND BOTTOM VENTILATION; SEALED COVERS; SUB-EARTH VENTILATORS; MODEL BEE-CELLARS, AND HOW TO CONSTRUCT THEM.

[A few years ago the subject of wintering was an old and hackneyed one until it was chopped off. There were a good many conflicting theories, and many were losing heavily. But in later years these theories have come more and more into harmony, and success is crowning the efforts of nearly all. It seemed to me it might be well for us to devote one whole number to a review of the subject, to consider the essential features, and those points upon which there seems to be now general harmony of opinion. I therefore asked a number, as before stated—those who write only occasionally, but who nevertheless are very successful—to give us briefly their methods, wherein they attain success, and then to tell us briefly what things they had learned in the last few years.* Among other things, I told them not to be afraid to go over old ground; that we desired to see how many prominent bee-keepers were following essentially the same methods. If these methods should be largely the same, it would be proof that they were nearly correct. While one might suppose that one article might be largely a duplicate of another, each writer treats the subject in quite a different way, as the headings will show. —ED.]

OUTDOOR WINTERING IN VERMONT.

THE IMPORTANCE OF A BROOD-NEST SUITED TO THE SIZE OF THE COLONY.

By J. E. Crane.

About the middle of September, or as soon after as I can get to it, I look over my bees and carefully weigh with my eyes the amount of honey that each hive contains, and set down the amount of sugar syrup that each needs to carry it until warm weather or spring flowers, beside the number of each hive. At this time I also see that each colony has a laying queen. If any are queenless they are broken up. If I find any drone-laying queens, the colony is united with others. I also note carefully the size of each colony, and *reduce the brood-chamber to correspond with the size of the colony.* I then feed sugar syrup, containing some honey, as quickly as possible, in quantity such that each shall have of honey and syrup from 12 to 30 lbs. This is to include the stores of honey in the hive before feeding. I expect to have my feeding all done by Oct. 15th.

I winter my bees on their summer stands, and the next thing to be done is to pack for winter; and I prefer to pack at once as soon as feeding is finished. I was 11 days this year

feeding about 8500 lbs. of syrup, most of my bees being from 3 to 11 miles from home, with only one horse to draw it.

For packing I use sawdust, chaff, leaves, and planer-shavings. All are good, but the wind blows the leaves at times very uncomfortably, and chaff is very apt to attract mice; and the sawdust has a way of getting through any little crevice or hole, so I dislike it, and prefer planer-shavings to any thing else.

As I leave the packing around the sides of the brood-chamber during the summer I have little to do but spread a cloth over the top of frames, and fill one side of the brood-chamber, if empty, with shavings, perhaps a few around the upper edge of the brood-chamber, and lay over the whole a cushion filled with packing, and tuck down snug and warm.

For cloths to lay over the frames I use cotton cloth, old pieces of carpeting, old woolen cloths, straw matting, and any thing that will let the moisture pass through. Burlap is good. Matting made of cocoanut fiber is perhaps the best, or at least will last longest. I have used enamel cloth, and very strong colonies seem to winter well under it; but I do not find the combs as dry and clean as when some cloth of open texture is used.

About half or two-thirds of the way from the bottom to the top of the brood-chamber in front I have a tube $\frac{3}{4}$ or $\frac{1}{2}$ inch in diameter to connect the inside of the chamber with the outer world. In other words, I have an upper entrance so that, should the lower entrance get clogged with dead bees, the upper one can be used by the bees and so prevent their worrying themselves to death.

Treated in this way, bees winter here in Western Vermont year after year safely, and, I believe, economically. My bees, so far as I know, are now all snug, and warmly packed this Oct. 24th, and will require very little further attention until April. Should the weather be warm, the bees can fly and enjoy it. If cold, they can remain snug and warm in their nests.

Were I asked what I have learned in recent years in wintering that is of importance I should say, *the value of having the size of every brood-chamber correspond with the size of the colony that is to occupy it.* Quinby, in "Bee-keeping Explained," says that a small colony will consume nearly as much honey as a good-sized one; and when both are wintered in the same size of hive he is undoubtedly correct; but my experience has been that, when the brood-chamber is reduced to fit the colony, the consumption of honey during winter does not seem proportionately greater for the small colony than the large one. Nor yet do I find the loss greater of small colonies properly put up for winter than large ones.

My theory is, that, if a good-sized colony should have eight frames to winter on, and 30

*I did not call on the regular contributors, because we were familiar with their methods.—ED.

lbs. of honey, a colony half its size will winter well on four combs and 15 lbs. of honey. Of course, after warm weather, and brood is maturing rapidly, the small colony will need more honey than the large one in proportion to its size, for it will mature brood almost as fast, oftentimes.

Now, if it is such an advantage for a small colony to have its hive reduced, would it not be a saving in honey to place a strong colony on, say, six combs? I answer no. They would be likely to consume even more honey than if left properly packed upon eight combs. The strong colony is liable to be overwarm and restless, and to rear a large amount of brood in winter, thus wasting its stores and vitality both. So I use the division-board freely, and have brood-chambers of all sizes from four to nine or ten Langstroth combs, and I have wintered very small colonies upon three combs with entire success.

Last winter, in my home yard and one three miles west, consisting of over 200 colonies, I lost, previous to May 15, but four, and one of these was broken up by thieves. Another was overlooked, and the frames but partly covered by a loose board, leaving less than one per cent loss from wintering. In another yard the loss was, I think, less than two per cent.

In another yard of over 125 colonies I thought I would experiment, and left several colonies upon eleven combs, and lost nearly all of them, while the loss among the rest was very trifling—perhaps one or two. In still another yard I experimented upon a larger scale. Most of the colonies in this yard were under size, and I left the most of them upon seven or eight combs, when they should have been placed upon from four to seven, and I lost not far from 25 per cent of them.

I made these experiments because I thought I had been running to the other extreme, and to learn if possible the golden mean.

Middlebury, Vt.

INDOOR AND OUTDOOR WINTERING IN YORK STATE.

ADVANTAGES OF SHALLOW FRAMES FOR IN-DOOR WINTERING: RAISING THE HIVE UP FROM THE BOTTOM-BOARD BY A SHALLOW RIM.

Friedemann Greiner.

In wintering my bees I practice both methods; viz., wintering on summer stands in permanently packed hives (chaff hives), and cellar wintering in light single-walled hives. I am generally successful with both of these methods. My way is as follows:

When I remove the surplus-cases after the honey season is over I ascertain whether there is a sufficient quantity of honey in each hive. I do not consider it necessary nor advisable to

weigh or lift each frame in each hive, as Mr. Doolittle recommends. I simply spread the brood-nest in the center, to see how far down there is any honey. I can then judge whether a colony has honey enough or not. I almost always find some colonies extremely heavy, a few too light. I make a note of this, and seize the first opportunity to make an exchange between the light and heavy colonies. I also satisfy myself at the time of removing the last surplus-cases as to the presence of a queen. Capped brood at this time I take as a sufficient indication, and I can almost always see whether or not there is brood when I spread apart the central frames, as already explained in the case of ascertaining the amount of honey.

My hives which I use for outdoor wintering are packed with from 2 to 3 inches of chaff, moss, or sawdust. I own up that I am one of the old fogies, using a honey-board. This I remove when preparing for winter; put on a quilt instead, with a 5 to 6 inch cushion over the same; a Hill device I do not use. After my hives are "fixed" up, say by Nov. 1, I scarcely look at them until the following spring. I give full entrance ($\frac{3}{8} \times 8$ inches), and like the idea of setting up a short piece of board, leaning against the hive, protecting and shading the entrance.

The cellar which my bees in single-walled hives are wintered in is under my dwelling-house. This cellar is also used for storing potatoes, vegetables, and provision in general, but is partitioned off and made perfectly dark. The sash of the only window is covered with tarred paper, and hinged to the casing so I may open it or shut it by means of a string without entering the bee-room itself. The window-casing is covered with screen, inside and out, and the space between (10 inches) filled with fine hay. A thermometer is kept in the bee-room, and arranged so I may read off the temperature by opening a slide from the other part of the cellar.

After the middle of November, on a cool, dry day, my bees are taken in and stacked up four high on a foundation of scantling. I leave on the bottom-boards and honey-boards; but I like the idea of placing a two-inch rim, size of hive, between bottom and body, except in case where a very shallow frame in a single story is used.

Ordinary cellars do not maintain an even temperature; at least, my cellar does not; so I keep close watch, especially during changeable weather. By opening or shutting the window I can regulate the temperature pretty well—enough so that I have been able to winter my bees in this cellar for ten years with very little loss. About April 10, or when the bees wintered out of doors begin to bring pollen, I take all colonies from the cellar, and do this during the night. In placing them on their stands I pay

no attention to their former location the fall previous.

Now as to what I have learned during the last few years in regard to the matter of wintering:

Upward ventilation through five or six inches of chaff has proved much better than a sealed cover for outdoor wintering.

A very shallow frame (half-story frame) in a single story has given me best results in the cellar, which I explain as follows: In so shallow a brood-nest the cluster of bees touches top and bottom. Any bees, when about to die, can not accumulate, but leave the hive and die on the cellar-bottom, which should be covered from time to time anew with dry sawdust. Purer air is thus secured to the colonies, and combs remain sweet. I have never as yet found a moldy comb in these shallow hives.

For ten years I have been a good deal like the man trying to teach his cow or his horse to live without eating, but failing, just as he thought the feat about accomplished. That is, I have been trying to winter my bees without sufficient protection, but I nearly always failed. I can look back upon the second decade of my bee-keeping career with greater satisfaction; for my loss has seldom amounted to over five per cent in one year during this time.

After writing my article so far I find I have omitted to say any thing about the character of the winter food. Of course, I should want to winter my bees upon wholesome food. But how can we tell beforehand any thing about it? There is the rub! Honey-dew might be extracted, and syrup fed instead; but who can know beforehand that honey-dew would prove fatal in its effect as a winter food? The only time we ever had much honey-dew in our hives, our bees, left out on summer stands and those taken out in February, or as soon as they became uneasy, wintered par excellence. To anticipate the true character of the stored food, I imagine, is a difficult matter. As Dr. Miller often says, I don't know any thing about it; therefore I leave this factor entirely out of my calculation. If I were situated in a different location I might do differently.

Naples, N. Y., Oct. 15.

WINTER CASES.

DOUBLE BROOD-CHAMBER PREFERRED; IMPORTANCE OF SPACE SECURED BY A RIM UNDER THE BROOD-FRAMES FOR OUT-DOOR WINTERING; THE TENTERMENT PLAN OF PACKING.

By J. A. Green.

I am asked to let the readers of GLEANINGS know how I winter my bees, and what I have learned during the past three or four years that is of practical benefit along that line.

My method of wintering has been given in these pages before, but it will do no harm to repeat it. As early as possible after the honey-harvest is over (which in this locality often continues good up to the 20th of September), I see that each colony has a sufficient number of bees, and honey enough to last until honey may be gathered again. As to the first point, I do not consider an extra-large colony more likely to winter safely than one that is a little below the average in numbers, but otherwise in good condition. I consider it very important that they should have honey enough so that I may feel perfectly sure that no more will be needed until it can be gathered from the flowers.

After my bees are prepared for winter I do not expect to do any thing more to them, as long as they are apparently in a normal condition, until the approach of the next honey season makes it necessary to prepare them for it. As this means that they are to be left undisturbed for nearly or quite six months, an abundance of food is necessary. A colony will get through the winter on 20 lbs. of honey, often less; but it is liable to need help to get it into good condition for the harvest. So if a colony has less than 30 lbs. I mark it as likely to need attention in the spring.

I use the double-brood-chamber hive, made almost the same as the Heddon hive, and consider that the bees winter in it rather better, on an average, than in the single-story hive.

Each hive is raised from the bottom-board by putting under it a frame or rim that leaves a space of about two inches between the bottom of the frames and the floor of the hive. This I consider very important. That the bees appreciate it is shown by the fact that they almost invariably cluster in this space below the frames. A colony in a solid cluster this way, with plenty of honey within reach, is in an ideal condition for wintering.

The rim which raises the hive is so made that the usual entrance next to the bottom-board is closed, and an entrance left at the top of the rim. This entrance is $\frac{3}{8} \times 12$ inches, giving an abundance of ventilation. The sides extend four or five inches beyond the front of the hive, and are covered there, making a "bridge" which supports the outside packing and forms a vestibule to the entrance, protecting it to a considerable extent from the wind.

Dead bees which fall from the cluster drop entirely free from the frames, and there is no chance of the entrance becoming clogged with dead bees or ice. I make these rims of lath or other thin lumber. The only drawback to their use, aside from the slight expense and trouble, is that they must be removed before the bees get too strong in the spring, or they will fill up the space with comb. This some-

times makes it necessary to unpack the bees sooner than I should otherwise like.

I believe thoroughly that outside packing pays. My favorite method is to pack four colonies together. During the summer the hives are in groups of four, two facing east and two west. They are far enough apart to allow of working all around them easily; but on the approach of winter they are moved close together. A large box (or, rather, a rim) without top or bottom is then placed around them, the ends resting on the "bridges" over the entrance so that the bees may fly undisturbed, the sides resting on the ground. The sides and ends are separate panels, which are lightly tacked together at the corners, just before they are set into place. The four hives are now about two inches from each other, with a space of three or four inches all around the outside, and six or eight inches over the top.

I generally use planer-shavings for packing. Leaves of the softer varieties are good; but I would not use chaff or straw, as the grain they are apt to contain is an attraction for mice. The whole is covered with a good roof—one that will not leak or blow off.

The hives I use are covered with a flat board cover, and this is left just as it was during the summer.

Several years ago I wrote several articles in favor of sealed covers for wintering—a method which was then gaining favor rapidly. For some reason, which I could never understand, the tide turned. Led by the editor of *GLEANINGS*, many of the new converts recanted, turned right-about-face, and declared that they wanted no more sealed covers. As I remained silent, and made no further argument or reply to those who criticised the methods I had advocated, some of my friends thought that I too had concluded that I had been mistaken. Not so. I am as firmly convinced as ever that sealed covers, with proper protection, is the proper method of wintering. Argument seemed useless; but when so many went back to porous covering and absorbents, I tried the experiment over, using quilts on a number of hives in order to be sure I was not mistaken. The result satisfied me that, the nearer I could come to a perfectly tight cover to the hive, the better. In practice it is difficult to always have perfectly sealed covers, as I often have to remove covers so late that the bees have no chance to seal them down again as perfectly as I should like; but I use every effort to have the top of the hive as tight as possible.

Single hives are packed in the same way, using a box that is at least three inches larger each way, and six inches higher than the hive.

For a roof, a sheet of corrugated iron is laid over the top and weighted down.

I am convinced that many who have tried outer cases for packing have not been as suc-

cessful as they might have been, because the cases they used did not have room for enough packing, especially on top.

Last winter, for experiment and comparison I left several colonies unprotected, and protected others thoroughly on top, but left sides of hives unprotected. The former all died. The latter were alive in the spring, but so weak that they soon dwindled away. The mortality among those packed was not over ten per cent.

Ottawa, Ill., Oct. 30.

WINTERING IN WISCONSIN.

THREE IMPORTANT CONDITIONS.

By C. A. Hatch.

Three things are of first importance to winter bees well: 1. Good stores; 2. Good bees; 3. Proper temperature. Given these three essential conditions, bees will winter with many conditions that otherwise are unfavorable. Like a man of good constitution, great vitality, and good health, the amount of abuse he will stand and be none the worse is surprising. Just so with bees. Give them the three things named above, or even the first two, stores and bees of the right kind, and they will live under many adverse circumstances. But take away either of these two, and no amount of coddling and fussing will make their wintering a success.

The sooner we get to recognize what are the essentials, the better it will be for us; for a great amount of effort has been directed to things that are of only secondary importance. Ventilation is of importance, but not first; so is moisture; but both, as affecting temperature, become all-important.

GOOD STORES.

Honey from flowers of any kind, if well ripened and sealed over, is all right, although there seems to be a difference in these, more on the account of the liability of being something which is *not* honey being stored with it than from the honey itself. Any thing that would cause the honey to ferment, as juice from any kind of fruit, sugar-cane, or any thing of the kind, seems to be detrimental. Honey-dew in our State, no matter what others say, is very poor winter food. The very best stores yet found is wild-bergamot honey.

That the winter food should be sealed is not essential, if it be thick; but sealing helps it about absorbing moisture and taking in ferment germs.

CHANGING STORES.

If our bees get improper food into the hive it becomes a serious matter to change this for the proper kind, for experience has taught that there is a right and a wrong way to do even this. Changing the frames of poor for frames of good honey is all right if thoroughly done early enough in the season so that the bees can

arrange themselves for winter; but to wait until almost time to put them away for winter, and then take out a few outside frames and put in the others does but small good, for the bees have arranged a winter supply around the brood-nest, and it is a chance if your good honey is touched at all, for the bees will be dead long before they get to it. Then why not put it in the middle? By this you have divided the bees and changed all their winter arrangements. A neighbor of mine last fall, when our bees all got much honey-dew, took all the honey he could get from 80 colonies, and had to leave 40 with the honey unchanged. In the spring, those undisturbed came out as well as the others, although the best of basswood was substituted for the honey-dew. From this we draw the inference that the only practical way is to remove the honey next to the brood-nest, put in empty frames, and then feed with some kind of a feeder. This gives them a chance to arrange the food in what *they* call the right place. Then arrangement of stores is important. Yes, but not essential. If proper temperature be given, the bees will go to the honey if it is in the hive, whether it is above or at the side or end of the cluster. I have experimented along this line with frames from 5 in. deep up to 19 in.; and, other conditions being right, it made no difference. Sugar stores are all right for winter if fed early, and good sugar is used.

GOOD BEES.

The next essential does not refer to any race or mixture of races, or any strain, but simply means bees of the proper age, not too old nor too young. If they are old enough to have a good fly before cold weather sets in, they are old enough and none too young. On the other hand, if they are hatched too late to get this flight I would call them too young for the best results; and if breeding stops early in September, most of the bees will be too old to come out alive May 1st, which they must do to have their places filled by new recruits. In case nature does not furnish enough bloom to keep breeding going until Oct. 1st, feeding would be essential; and this should be done with the best of honey or granulated sugar; for all not used in breeding goes to supply winter feed, and it would be like compelling your cows to eat moldy hay to put poor food before your bees.

TEMPERATURE.

This in our climate is best controlled in an underground repository which should be well under ground, and controllable at a temperature of 40 to 45 degrees. The cellar should have ventilation, controllable, but no draft; best obtained by a pipe connecting with a chimney or stove above, in which a fire is kept most of the time. Details of arrangements in cellar may be considered, such as

VENTILATION OF HIVES, ETC.

Top or bottom ventilation of hives has been a vexed question with me, and I am not so sure on this point now, but have come to this conclusion: if much bottom ventilation is given, but little at top is needed; and if much at top, but little at the bottom. I am inclined to large opening at the bottom and none at the top, for the reason that it seems to preserve the natural heat of the cluster, and at the same time allow all dead bees to fall away from the combs, and thereby avoid foul air and contamination by mold and decay. I have practiced leaving the bottom-boards off entirely, and setting the hives so as to have a space of about 8 in. wide the whole length of the hive clear, and leave the quilt and cover on; also the honey-board if the hive had one on in the summer.

TIME TO PUT INTO THE CELLAR.

The 20th of November my bees are put into their winter quarters, as a rule, and remain there undisturbed until April 1st to 10th.

Ithaca, Wis., Oct. 10.

INDOOR WINTERING IN YORK STATE.

VENTILATION AN ESSENTIAL; HIVE AND CELLAR VENTILATION; A VARIATION IN TEMPERATURE BENEFICIAL; HIBERNATION.

By P. H. Elwood.

It is now too late to make preparations for winter, and I write this assuming that such preparations have already been made. Strong colonies, with plenty of good "honey" or its equivalent in sugar syrup, are the bases of all successful wintering. I know weaker colonies sometimes pull through finely; but as a rule they do not. The same with colonies rather short in stores. Not only do they need enough to carry them through the winter, but enough to last through the spring. More honey is consumed through the spring than through the winter. The stores should also be so located that the bees will not be compelled to change their brood-nest during cold weather.

In this locality bees are nearly all wintered in cellars. Bees often winter as well out of doors, and occasionally, in an open winter, even better; but now and then we have a winter so severe with steady cold so long continued that a large proportion of the colonies out of doors perish.

For indoor wintering the conditions of most importance are temperature and ventilation. As it is so difficult to control temperature in repositories above ground, such have been quite generally abandoned. The temperature named by different writers varies from 38° to 50°; but for the average cellar, 42° to 45° is probably about right. In a very dry cellar the temperature of 38° to 42° may do very well; while in a very damp cellar the temperature

might be raised to 45° or 50°, and yet be no warmer.

The ventilation of the hives also makes a difference as to the temperature of the cellar; for with upward ventilation to the hive, a higher temperature may be maintained in the cellar.

The purity of the air also makes a difference, for the bees will remain quiet longer in a high temperature if the air is pure. Whatever the other conditions, all agree that a freezing temperature is too low. Far better to let bees remain on their summer stands unprotected than subject them to this. In the damp atmosphere of a cellar this low degree is apt to cause a dangerous condensation of moisture upon the combs of honey.

Ventilation is necessary, both to control the temperature and to maintain the purity of the air. The heat of the earth is the main dependence for controlling the temperature of cellars; but with a cellar fully stocked with bees, recourse must be had to ventilation. At no time, no matter how cold, can we close all ventilation to our cellar without causing a dangerous rise in temperature. Again, when we have a very warm spell of weather we find it necessary to throw open all ventilators at night, including doors, and partially close them in the morning. Sometimes the temperature does not fall much in the cellar; but we find the bees quieter in the morning in the pure air. Sub-earth ventilation, if well put in, is useful at such times; but with a cellar only partially stocked with bees it can be dispensed with.

Ventilation for maintaining the purity of the atmosphere has been a disputed point; but during the last few years it has been so generally accepted by intelligent bee-keepers that but few remain to dispute it. The necessity for such ventilation was abundantly proven many years ago; but so many had wintered successfully without any provision for change of air that it was thought some mistake had been made by the claimants. It is now generally admitted that the mistake was made by those who did not admit the claim, in overlooking the factor of natural ventilation, which, in many repositories, is abundant for the number of bees kept in them. By natural ventilation is meant the change of air taking place through the crevices and materials, such as wood, mortar, brick, and stone, of which the building may be constructed. For fuller account of natural and artificial ventilation, see *American Bee Journal*, p. 233, 1878.

During the last few years we have not gained so many new points, but have more fully established the old ones. That bees enter a state of quietude that may rightly be called hibernation is fully accepted by us. Like hibernation in many other animals, this sleep is not continuous, but at intervals the bees awake to partake of food. Prof. McLain states this interval to

be about a week with the honey-bee; but we need further observations to confirm or establish this period. We also need to look up the conditions most favorable for this awakening. My own observations lead me to believe that, when the temperature remains uniformly low for a long time, the awaking process is either delayed too long or is not complete enough, so that many bees either suffer from hunger or perish from starvation with plenty around them. That is, a variation in temperature within certain limits is better than absolute uniformity. Mr. Quinby was of the opinion that a fire in a bee-cellars every few days would be beneficial. We put our bees in the cellar with plenty of lower ventilation (about 20 inches), but the upper part of the hives is as close as carpentry and metal corners can make them. A moderate amount of upward ventilation may be better in damp cellars, or in cellars where it is difficult to keep the temperature down. Our cellar is overstocked, and we have to remove a part of our bees too early (in March). Upward ventilation might benefit us, but our hives are so constructed that we can not conveniently make the change, so we shall, instead, somewhat reduce the number of colonies put in the cellar. Spring dwindling is a part of poor wintering—the last stage. The vitality of the bee is exhausted, and it falls a prey to every wind that blows.

For fuller account of hibernation, see article on "Hibernation," republished in *GLEANINGS* a couple of years ago.

Starkville, N. Y., Oct. 24.

THE UP-GROUND REPOSITORY PLAN.

LOW TEMPERATURE TO START ON AND HIGHER TEMPERATURE FOR BREEDING; ARTIFICIAL HEAT AND ITS ADVANTAGE.

By H. R. Boardman.

A review of the best methods of wintering at this time, when bee-keepers are beginning to think of the long helpless sleep of their bees during the cold months of winter which are near at hand, will, no doubt, prove profitable to many who are hesitating as to what they ought to do. I will briefly review my own methods, which have been given before, and which have proved entirely successful and satisfactory.

I winter in a bee-house planned and prepared for the purpose. I have no confidence in outdoor wintering by any method that I know. I have for quite a good many years experimented in that direction by leaving some of my colonies out on the summer stands. The results are quite encouraging some seasons; then comes a cold winter, and the bees die, or winter poorly. These experiments have proven expensive to me, and I shall hereafter be satisfied to winter all of my bees inside.

Whatever preparation is to be made by way of feeding or handling should be made before the approach of cold weather. This is not as important with indoor wintering, where the bees are to be in a mild temperature, as in outdoor wintering.

The queen is the most important factor in the future success of the colony. Young queens will lay, and keep up brood-rearing later, and begin earlier in the spring, than old ones, thus furnishing young bees for winter, and also building up earlier in the spring, with less liability of queenless colonies; but colonies with such queens will consume more stores. Late queens have these characteristics to recommend them.

I set my bees into the bee-house as near the 15th of November as circumstances will permit. At about this time I watch for a cool day when the temperature is below 32°, and falling, as the bees then handle much better than when the temperature is rising. This may seem a small matter; but it is quite important, and is well worth attending to.

I have a system of locating that enables me to put each colony back upon the stand from which it was taken, when they are set out again, with very little trouble.

It is a system entirely my own, and one I have used in all my work with bees almost ever since I began my experience in bee-keeping. It does away with tags or numbers or marks on the hive except when the hive is removed from the stand. My hives are arranged in rows. The rows are lettered in alphabetical order. The stands, and not the hives, are numbered in the rows. When I am all ready to set the bees into the bee-house, with a piece of white chalk I mark each hive to correspond with the stand upon which it rests; thus:

| | | | | |
|-----|-----|-----|-----|-----|
| A 1 | A 2 | A 3 | A 4 | A 5 |
| B 1 | B 2 | B 3 | B 4 | B 5 |
| C 1 | C 2 | C 3 | C 4 | C 5 |

and so on through the yard. I think the advantages of my system of locating will be comprehended without further comment.

My system of securing abundant lower ventilation has been described and illustrated so many times that I will only call attention to it briefly. It is very simple. I first place a row of covers 5 or 6 inches apart; then pick the hives up in the yard, from the bottom-board, and bring or wheel into the bee-house, on a hive-cart, and set them over the open space on the covers. This will bring the hives about the same distance apart that the covers are. Set another tier of hives on top of these in the same way, leaving the open space below directly under the hive, and so on as high as desired. After putting my bees in in

this manner, if at any time during the winter I should want to refer to any particular colony, or should want to set one or more out on the summer stands, which often happens with me, I should know just where they belonged.

After the bees are all in the bee-house I leave the doors and windows open, giving abundant ventilation and the full light of day until the weather becomes quite cold. By this means the temperature is kept well down, say below 40°. I prefer that the temperature should not be much above this until there are pretty evident signs of brood-rearing toward spring, which will be shown by increased activity of the bees.

After brood-rearing has commenced it is very important that the temperature be kept pretty well up, say 50° to 55°. A low temperature at this time, if long continued, is almost certain to produce unfavorable results. It is at this time that artificial heat plays an important part in regulating the temperature of the bee-house, which is a factor in wintering bees that I could not think of dispensing with; in fact, it grows in favor with me each year, and I would not think of constructing a bee-house without arrangements for this purpose. I never use artificial heat directly in the bee-room, but in a room adjoining. This makes the warming so gradual in the bee-rooms that the changes of temperature are almost imperceptible to the bees, and causes no disturbance.

I want the bee-repository as free from moisture as possible during the entire winter—so perfect in this respect that the stores in the hives will be kept perfectly, without mold or fermentation. This I consider important. Stores demoralized by a moist condition will surely result in an unfavorable condition of the colony in spring, which will continue to affect the bees long after they are set out.

While upon this subject I wish to call attention to the fact that bee-keepers who last winter advocated moisture as a favorable condition, in the bee-house have been slow to come forward with a report of their bees after being set out, to substantiate their arguments.

After the bees have been perfectly wintered it is of great importance that they be set out on their summer stands on a warm day when they can at once take a thorough flight. Very serious damage will result from setting out when the weather is cool enough to chill the bees that fly out for the first time.

In regard to winter stores, I consider sugar much safer for that purpose than honey.

UNITING.

There is no time when colonies may be united with so little trouble as when set out of the bee-house in spring. It is unnecessary to give any attention to the queens. I unite at this time by placing one hive on top of another,

using the best combs on top, as the colony will eventually occupy the upper story. I have had both queens continue laying in such united colonies until swarming-time.

East Townsend, O., Oct. 22.

A MODEL BEE-CELLAR.

SMALL HIVES PREFERRED FOR THE CLUSTER.

By B. Taylor.

To winter bees successfully two things are positively indispensable, especially in the northern sections of our country. I regard the condition of the bees themselves as being of first importance. Next, good winter quarters. The wintering-cellar at the Forestville apiary was made by digging into a clay hill with a 30° slope, in bank-barn fashion. The walls are of solid stone 22 inches thick for 3 feet in height. The next 4 feet the wall is only 14 inches thick, leaving a jog on the inside of 8 inches. A sill 2x6 was laid on this jog, and a frame of 2x4 scantling set up even with the inside of the bottom wall, the plate being on a level with the top of the stone wall. This 4-foot-high frame was sealed on the inside with matched flooring. This leaves a space of 8 inches between the inner wooden and outer stone wall. This space was packed with dry clean pine leaves. This prevents frost from entering the cellar through the top of the wall. The floor over the cellar consists of three separate floors of matched flooring with a space of two inches between them. These two-inch spaces are filled with dry sawdust. The first and second floors were covered with tarred sheeting-paper before the sawdust was packed in. This keeps frost out from above. A common frame, four feet high, was made on top of the wall, and a first-class roof of shingles covers all. The cellar is divided into two rooms lengthwise by a board partition so one half the bees could be kept in quiet darkness while the other half was put in or out. An ante-room of 4 feet in front, with one heavy outside and an inside door through the partition into each room keeps out frost from this direction. In the center of the partition that makes the ante-room there is a brick vault from bottom to top of cellar, 4 feet square, with a door in one side. In this vault is a proper stove where a slow fire can be kept to warm up and purify the air when needed. The stove is operated from the ante-room, and does not disturb the bees. The cellar is floored with two inches of cement. There are proper means of ventilation, and the air is pure enough for a living-room. The earth is banked at sides and back end to top of wall; the entrance is level with the bee-yard outside. When the bees themselves are in right condition they winter in this cellar with great certainty. The outside foundation wall to our dwelling is

made by digging a trench $2\frac{1}{2}$ feet deep, and building a wall in it to two feet above the ground. Inside of this wall, and four feet from it, is the cellar wall proper. Dirt is filled in between these two walls to the bottom of the sills. The chimney of the house starts in the center of the cellar, with a flue for ventilating. There is a cement floor three inches thick, with a complete system of underdrainage. There is a brick drain laid in a circle around the house outside, and as low as the bottom of the cellar. The drains have a proper outlet. This extra drainage was necessary because there was a stratum of clay that held water, and the cellar filled five feet deep in rainy seasons. Now it is so dry that the hoops loosen on barrels in winter, and is so warm we use an outside entrance at all seasons. I have frequently wintered from ten to sixty colonies here, and with greater success than in any other repository I ever used.

I have given these detailed descriptions to guide others; for good quarters are vital in successful bee-keeping. The best success I have had in preparing colonies for winter was by covering the hives with either cotton quilts similar to bed-quilts, or covers of thick soft felt paper, such as is used under carpets. The covers were held tight to the top of the hive by a frame of inch-square wood screwed down tight. There was a Hill device, or something the same, under the covers. The bees came to the top and wintered directly under and in contact with covers. Where paper was used, a square of light cotton sheeting was put under the paper to keep the bees from gnawing through. The hives were left on the bottom-boards, with an entrance $\frac{3}{8}$ high the entire width of the hive, front and rear. They were piled up four or five high, as need demanded. They were put into the cellar about November 1st, and left undisturbed until about April 1st, when they were put on summer stands.

One of the things I have found out in recent years is, that we must have plenty of young bees to begin winter confinement with. From Dec. 1st to April 1st is five months. Bees, as a rule, entirely stop breeding here by Oct. 1st, and do not raise much brood before May 1st. This is *seven months*. I do not believe workers live much longer than this under the most favorable conditions. Bees hatched in August will be nine months old to reach May 1st. I have had the most positive proof in the last two years that they can not be made to live so long by any known skill or perfection of food or quarters. Some claim that bees live very long when idle. I do not believe that men or animals that follow nature's demands as to work shorten their lives thereby. I have observed that loafers do not live longer than the industrious who lead a just and temperate life. I expect to live an active life while I can walk,

and I do not expect to lessen the number of my days thereby.

I have found that bees keep drier, and winter better, when they cluster at the top of the brood-nest and over their stores. I have long believed they winter best in a small hive crowded full of bees, rather than in a large one in which there is much room outside the cluster. Such cold vacant space condenses moisture, and causes mold and bad air. I believe any live thing that was made to live in the pure open air, like bees, are injured by damp, cold, bad air.

I have become convinced that bees winter better with just enough always accessible honey in their hives to feed them safely until warm weather. I can keep combs of surplus stores purer and better in a warm dry store-room than in the vacant space in a large hive occupied by a colony of live bees.

Mr. Editor, I have, in the above thoughts on wintering, dealt more on general principles than minor details, because I believe minor matters are better understood than general principles. I have noticed that bees winter best in years of good honey crops, and when the hives are heavy with natural stores. I always had the worst luck when the colonies had to be doctored in any way. I have found all kinds of honey, and even honey-dew, when collected in a natural way by the bees, good winter food. One fall the hives were all heavy with honey-dew, and they came out in first-rate shape. I now get nearly all the white honey in sections or extracting-supers, and believe it pays better to use the dark honey for wintering and raising brood than to fuss with feeding sugar.

Who can tell why some colonies live and others die, all having the same kind of stores and quarters, and the same care?

Forestville, Minn., Oct. 16.

ANOTHER MODEL BEE-CELLAR, AND HOW CONSTRUCTED.

SUB-EARTH VENTILATORS, AND WHY THEY MAKE CELLARS DAMP; TEMPERATURE.

By S. T. Pettit.

I make it a point to have my bees in good shape, and well supplied with good stores. When I must feed I bring 8½ wine qts. of water to a boil, then stir in 40 lbs. of sugar; and when that boils I lift it off the fire and pour in 8 lbs. of honey, and stir well. The ½ qt. is for evaporation. I am of opinion that a good deal of loss occurs from too much water in the food. Many colonies fail to do more than just store it. My cellar is constructed in heavy clay, and a shop is built over it. The shop is very warm, and has a 5-inch floor. The cellar is so deep that the shop floor is about even with the surface of the ground. Now, as the earth is always

giving off heat, this depth is of much benefit to the bees. With a cellar so constructed, more air can be admitted, and the temperature keep right, than in one whose walls are considerably above ground, even though they be several feet thick. A brick or stone wall, however well made, can not supply heat; but the earth does, and it will pay to utilize it.

My cellar-walls, though under ground, are as nearly air-tight as can be made of stone and mortar. The wind blows pretty freely through the ground, hence the necessity.

The windows are on the break-joint principle, to admit air and exclude light. They are adjustable to suit the weather. Large curtains of open cloth are hung between the windows and the hives to distribute the in-flowing air.

About the 20th of November the bees are placed in, about 18 inches from the ground. The back end of each hive stands 3 inches higher than the front. I pry up the back ends and slip in ½ inch bits of lath. I leave the cloth, covered with propolis, flat on top of the frames. I like it sealed down air-tight. A chaff cushion is placed on top of each hive. To keep the hives at the proper pitch, a piece of lath is laid across the lower end of each hive on top of the cushion, before placing the next hive on. The walks, to prevent crushing bees, are made of boards, across which are nailed strips ½ x 1 inch. These strips are nailed one inch apart, with edges up. The floor is natural earth, worked down hard and smooth.

A stove is in the shop above, in which I keep a gentle fire most of the winter. With the stovepipe is connected a 6-in. pipe, which extends to within 8 in. of the cellar-floor. A damper is in this pipe. Now, in sharp weather the upward rush is pretty brisk; but with the combined heat of the bees and earth the temperature keeps at about 40 in steady cold weather.

I wish to point out that, although the air may be saturated with moisture at 40°, when it enters the hives and is warmed to the temperature of the bees it becomes thirsty, and takes up the moisture thrown off by the bees, and thus they are kept dry and healthy. This is one reason why the temperature in a damp cellar should be kept down to about 40°; and, more than that, this difference of temperature of the cellar air and the hive air, if the bees are fixed up right, produces automatic ventilation through the hives, and the bees are not obliged to fan to drive out foul air; and that being the case, and their conditions and surroundings being just right for their happiness and supreme comfort, they will become so quiet that not a flutter nor hum can be heard from most of the hives.

I have learned during the past few years, 1. That bees that hum all winter run down in spring more or less, while those that are win-

tered right boom right along, and generally gather a surplus of spring honey, and are ready for any flow that may come. I do some visiting among bee-keepers. 2. That sub-earth ventilators as usually constructed make the cellar very wet, and that they are of but little if any use made of tile. 3. That damp cellars may be made dry by admitting no air that comes in, in any way, through the ground, either through the walls or under them, and admitting air only from above ground. 4. That it is a mistake to leave the bees in the cellar late in spring if they are at all uneasy. If a fine day comes the first week in April, out go my bees. 5. That a good warm cushion on top is all the packing necessary in spring. 6. That bees do just as well with entrances to the north as any other direction, provided there are good wind-breaks to the west and north. 7. That hive air will be purer and dryer, and the bees warmer and more comfortable, with liberal entrances than with too small entrances. Also, there will be less robbing and less fighting among querulous Italians of the same hive; entrances from 3 to 6 inches in early spring, and $\frac{3}{8}$ high. Querulous Italians must have more to keep them at peace among themselves. 8. That bees winter better and do better in spring in small hives than large ones. 9. That bees winter better on 9-in. than on 12-in. frames. 10. That cards more than ten inches deep should have a hole or two made a little above the center of all the combs.

Belmont, Ont., Can., Oct. 19.

[It is very encouraging to note, as one reads over this series of very interesting articles, that the "wintering problem" is not such a serious one as it formerly was; indeed, it may almost be said to be solved if we may judge from the unbroken records of success of not alone the few who have given us their views, but of the hundreds of bee-keepers all over our north lands where winter's rigors hold full sway.

Not all of the writers above follow exactly the same methods; but it is significant that they agree on all important essentials.

These, primarily, seem to be—good bees of right age; good food, and suitable protection. As to food, granulated-sugar syrup fed early enough to be well ripened seems to hold the first place; after that, good light honey. For protection all are agreed that outdoor colonies should be packed in double-walled hives, and that those indoors should be in a frost-proof room, generally under ground, darkened, and capable of good ventilation. It seems to be easier to control temperature in the cellars than in the upground structures.

As to ventilators for repositories: The sub-earth do not receive much indorsement. Mr. Pettit holds that the fresh air admitted through underground tubes acquires an undue amount of dampness, and is, therefore, detrimental. The ventilation that is preferred seems to be from doors and windows that may be opened at intervals at night.

It is significant, too, that the ventilation of the hive should be from the bottom, either by leaving the bottom-board off entirely and piling the hives over the spaces of those below, or of raising the hive up on a rim to give air-spaces

under the frames. So far, then, indoor colonies should have tight covers.

When it comes to the outdoor bees, there is a divided opinion as to the desirability of a sealed cover.

All put their colonies into the cellar about the middle of this month, or about the time this journal reaches its readers.

As to outdoor packing, planer-shavings seem to receive a prominent recognition; and perhaps I might say in this connection that we now prefer them to chaff. They keep dryer, and are more easily obtained.

Hibernation! what a bone of contention that used to be among the bee-brethren! After it had been harped upon and harped upon again, until it was hoped the word would never see the light again on the pages of a bee-journal, it was dropped, but not without some of the brethren feeling that they had been deprived of a right to the "last say." But as Mr. Ellwood has introduced it in this number he has shorn it of all its old "non-swallowable" features (excuse the coinage), and left it where there is no chance for argument. Either we have advanced in our knowledge and practice of wintering, or else he has explained it so that we understand the term better when applied to bees. At all events, we can agree with him, I think.

There, now, it just occurs to me that I had asked Dr. Miller to review these articles in our next issue—to digest them, as it were, and give us the solid meat. So I did; but, oh my! I haven't begun to review them or sum up the good things. Even if I have, I may have seen through a glass darkly. Well, doctor, we will suspend judgment until we see through your eyes, after which the subject will be open for further discussion if thought necessary.—ED.]



FEEDING BACK; AN INTERESTING SERIES OF EXPERIMENTS.

Question.—I saw a little while ago, in one of my papers, something about "feeding back." Can you tell us in GLEANINGS what is meant by this, and is there any profit in it to the person who practices it?

Answer.—Undoubtedly, every one of the older readers of GLEANINGS knows what is meant by "feeding back;" but in order that the younger readers and our questioner may know just what this term means I will say that feeding back is the feeding of extracted honey, taken during the honey harvest, back to the same colony from which it was taken, or any others if so preferred, after the harvest is past, for the purpose of having said honey stored in sections, the colony at this time having been fixed for section honey. The object of such a procedure is to get an article of less price converted into one which brings a greater price. By using the extractor during the honey-flow, from one-third to one-half more honey is obtained than would have been secured had the colony been worked for section honey; but said honey does

not bring more than about half the price comb honey in the sections does. From the above it will be seen that, if a way could be devised whereby the greater quantity of extracted honey could be gotten into the same amount of comb honey, a great gain could be made to the apiarist. This idea has caused much excitement in the past, and quite a few of to-day are still trying it. I know of no better way to illustrate what I wish to say than to give some of my experiments conducted during the past.

Some eighteen or twenty years ago the first comb foundation of any amount was sent out; and as the bees accepted it readily I thought here was a chance to make a profitable business by extracting my honey during the flow of white honey, and feeding the same back to the bees later on. By the use of foundation, much could be saved the bees by way of comb-building. Accordingly, after the harvest of white honey was over, I prepared three colonies that were strong in numbers in this wise: After contracting the brood-nest so that only combs full of brood remained, the first was given 28 two-pound sections (as that was the size I then used), filled with foundation, together with four sections filled with comb, as bait sections. The second was given 21 sections, from one-half to two-thirds full, for the bees to finish up, the 21 weighing, when put on the hive, 35 pounds. The third was given 21 sections with only starters in them, the same being a triangular piece of comb, whose length was two inches on each side. Each colony was fed all they would carry, and a record kept of each. The first feed, each took 15 lbs.; and, soon after, those having the sections two-thirds full began lengthening the cells and storing this fed honey; and when they were completed ready for market, I had fed 42 pounds of extracted honey. Upon weighing the sections again, I found they weighed 47½ lbs.; so I had fed 42 lbs. to make a gain of 12½ lbs. in the sections.

Thinking that, perhaps, they would do better on a second lot, I immediately put on 21 more, weighing 34 lbs., and fed 39 lbs. to get them finished. These were not filled so full, and weighed only 46 lbs. when finished. So I fed 39 lbs. this time to make a gain of 12 lbs. in the sections, the second trial. No. 1. with the foundation, were fed till I had given them 134 lbs., when I took the sections off, having 22 finished, which weighed 49½ lbs., and 8 unfinished, weighing 13 lbs., so I had 62½ lbs. gross weight in return for 134 lbs. fed.

I find by my diary, from which the above is taken, that the experiments with No. 3 were never completed. After I had fed them 50 lbs., or thereabouts, they went to building comb quite nicely; but it soon seemed to become an old story, and after a while they simply lived out of the feed-dish, and did nothing else.

Later on the papers gave out that, to succeed

in this feeding-back process, the honey must be thinned to about the consistency of the nectar coming from the fields, so I tried this, and have tried, many times since, experiments similar to the above, varying them as new ideas were suggested in the papers, or came to me from my own brain, but always with about the same results as given above. In all these feeding operations I have ascertained this fact, that bees fed in excess of what they consume in feeding the brood become idle, as far as field work is concerned, simply living out of the feeder, not bringing in an ounce from the fields, while those not fed will generally get a living, and in some instances make a small gain in their stores. If fed when honey is plentiful in the fields, they will store no faster out of the feeder than others not fed will from the fields; while those storing from the fields work in the sections with double the energy which those do which are being fed.

The experiments given above prove either that I have not "caught on to the matter" or that the doctrine of "feeding back" is a fallacy; and, so far as my experiments go, answers the questioner in the negative.

Another thing is proven by these experiments, which is, that the stories going the rounds of the papers every little while about comb honey being made by feeding glucose or other sweets are merely newspaper canards; for no one, at present prices, can make it profitable to raise comb honey other than by the good old way of having the bees bring in the honey from the fields; and no one is foolish enough to go to the trouble and expense of feeding sweets to produce comb honey unless there is some dollar-and-cent profit in it. People who start such stories, to the injury of a legitimate business, would do well to know something of the nature and habits of the bees, before putting sensational stories before the too credulous public as facts.

[These experiments, especially from the hand of Doolittle, are interesting and valuable. If our friend D. has ever given them before in print in just this way I was not aware of it. It is worthy of note in this connection, that a good many other careful experimenters have come to about the same conclusion; viz., that feeding back doesn't pay. I know there are some who think it can be made profitable, but I have often wondered if they took account of all the costs.

If feeding back thinned honey is not a paying operation, would the feeding of sugar syrup be any more so? If that is true, then sugar-syrup comb honey would not be produced to any great extent before it would put the producer of it in a bad plight financially. In other words, the product would die its own natural death. If there is any sugar honey on the market anywhere in this country, I am not aware of its existence. If it is to be assumed that it would be sold under its real name, then it certainly is not advertised or quoted; and why? Perhaps because it can not compete with natural honey from flowers.—ED.]



SWEET CLOVER; WHERE IT GROWS; NOT A
NOXIOUS WEED.

Dr. Miller:—Will you please give in GLEANINGS the season of sweet-clover bloom? I think of putting in a field if bloom suits, as my Belgian hares could use the hay to a T. Would I have a stand if I sowed the seed in March on top of bare ground, like buckwheat stubble? I understand it grows easily. W. W. K.

Pottstown, Pa., Oct. 14.

Dr. Miller replies:

I don't know just when sweet clover commences to bloom, but it's some time after the beginning of white clover—perhaps a month later. This year it was at its best about the middle of July, but that was unusually early. It continued to bloom till the weather was too cold for bees to fly. The first frosts that kill all the tenderer plants seem to have no effect on sweet clover, and the bees can be seen working on it after the weather becomes freezing cold, providing a warm day comes.

I've no doubt it would come all right if sown in March. It grows very easily where you don't want it to grow, and will do well in very hard ground; but I've known it to fail of a catch in very carefully prepared ground. It doesn't seem to do as well usually on soft ground, but perhaps that's because it is sown too shallow. I've seen some fine growths on soft ground where the seed was plowed in. A little patch of that kind on my own ground would make good mowing in the latter half of October. I've just been out and found one stalk that measured 29 inches. But then I've found another patch nearly as good on very hard ground. If sowed shallow on soft ground it may heave in winter. Stamped in on the roadside it will stand the severest winter. If you sow on buckwheat stubble in March, merely letting the seed lie on the surface without covering at all, I don't believe much of it will come. Scratch it in or else plow it in.

C. C. MILLER.

[Sweet clover, it is true, will grow where you don't want it to; but at the same time it is not a noxious weed in the ordinary sense of the term. Again, it won't grow where you want it, especially on the better soils. It seeks dry waste places in the hard clay along the roadsides and railroads—places where nothing else would or could possibly grow. If, however, instead of seeking such places it sought out the best of our farms, and if, too, it were hard to eradicate, we might call it a noxious weed.

With us it begins blooming just about as basswood ceases, and continues until a couple of weeks before frost. Along the latter part of July and first part of August it often yields just enough honey to be perceptible in the hives, and enough to keep robbers kind o' half

way decent during our queen-rearing operations.

The plant is destined to take a much more prominent place among our honey-plants—the more so as it is occupying otherwise waste lands, and comes after the regular honey-flows. Farmers are slowly beginning to learn that stock will eat it, and this will serve to break down their old prejudice against it.—ED.]

OLD FOUNDATION IN OR OUT OF THE BOX
READILY ACCEPTED BY THE BEES.

Ed. Gleanings:—In Oct. 15th issue you ask for experience from readers in the line of using foundation the second year with exposure to air, as suggested by the zigzaggings of the bees of Bro. Israel, which he calls cross-eyed bees. They must have been emulating the course of the children of Israel in entering the promised land.

I remember of using, several years ago, quite a quantity of thin section foundation the second year. Part of it had been kept in the bulk as I received it, and part had remained in the sections over winter. If I forget not, I had some of it as narrow starters on brood-frames over winter. Part of it was "tissue" foundation, from W. W. Bliss, of Duarte, Los Angeles Co., and was well named, from its pliability, both the first and second seasons, even at low temperatures, where other foundation would break. Part of it was very brittle and glassy, so that I had to be careful in using it.

My bees at that time were Cyprians, pure, and hybrids; and, while cross-hearted in the extreme, they evidently must have been straight-eyed, for they pulled out the foundation all right and built things true in every section, regardless of the condition of the foundation.

CLOSED-END FRAME PREFERRED, AND WHY.

I can not but say a word regarding your frame-spacers—see same number of GLEANINGS. I like the closed-end frame for a self-spacing frame. My preference is for Alley's Bay State hive, not patented, or some modification of it, as I am not sure that the hives I have made and used are modeled accurately after it. I believe it to be the best hive in use. The Aspinwall ought to be a very good one. I have found closed-end frames, lifted out and replaced from above, to be remarkably easy to handle. They kill fewer bees; they are handy to put into place; they have been a real delight to me. There is no need of trouble with propolis. If one only gets the knack (or, as F. Thompson says, the "kink" of handling them, they are easily operated, and there is no awkward situation in their use that I have not found to be worse duplicated in the ordinary narrow hanging frame.

A. NORTON.

Monterey, Cal., Oct. 28.

[Your experience confirms that of Dr. Miller and others. It looks now as if all old foundation were perfectly good, whether kept in boxes or in sections exposed to the air. Friend Isra-

el's bees must have been cross-eyed for other reasons.

As to the closed-end frames, there are many things in their favor; and as between them and Hoffman frames I don't think I should have much choice. We adopted the Hoffman because they were better adapted to the hives generally in use. The Hetherington-Quinby is one of the best closed-end-frame hives in use—perhaps the best. I know it is used extensively, and is easily handled.—ED.]

OLD FOUNDATION IN SECTIONS ALL RIGHT.

In a footnote to an article by J. P. Israel, on pages 771 and 772, you ask for experience in regard to old foundation. I have taken about 400 pounds of nice amber comb honey from 20 stands of bees (of mixed breed) this fall, and it was all stored on foundation that had been in the sections and stored supers for three years, and there was not a poor comb in the lot except two or three, which were fastened to the divider. I use Heddon supers.

Lacota, Mich.

E. A. MALLORY.

[These are just the kind of reports we want. Let's have lots of them, giving actual facts. It is proper to remark right here that friend Mallory's experience agrees substantially with what Dr. Miller recently said in a Straw.—ED.]

CROSS BEES; HOW BURNING OLD HIVES AND BROOD-FRAMES STIRS THEM UP.

In reading your A B C book I have not noticed any precautions against burning wood with bee-gum or wax on. A few days ago I noticed that our bees were unusually cross, and I couldn't account for it. They would fly at anybody anywhere near. I couldn't even stay around to watch them. Upon inquiry I found that my brother had started the fire that morning with kindling-wood that had more or less wax and bee-gum on it. Father says that, in the East, when he used to hunt bee-trees, by rubbing wax between two hot stones he could draw bees from all around the country. Among some friends who came to see us were some children, who, after being here a few days, thought they would like to have a bonfire. I told them all right, only to be careful not to put any thing on that had wax or bee-gum on it into the fire. Presently I noticed that the bees were after them in good earnest, and I had to go to the house myself to keep from getting stung. One of the children got quite badly disfigured after they had been chased into the barn several times. On asking them what they started their fire with I found that they had used the shavings off from old brood-frames, which I had lately cleaned. Burning any thing of this kind seems to bring robber-bees around more effectually than any thing else I know of. The scent of burning beeswax does not seem to limit itself to any locality. If we have any thing of this kind to burn we wait till night comes on. Doubtless, burning old hives to destroy foul brood, or using them for kindling-wood, as recommended in the A B C, can be done with

perfect safety if the apiary is not near the spot.

Fountain, Col.

J. W. CROUCH.

[Yes, it is true that the burning of parts of hives smeared with propolis and wax will make bees cross, especially if they have been in the habit of robbing. Nothing, I believe, is said concerning this except under "Bee Hunting," where it is directed to make a smudge, to call the bees in the woods, by burning old comb. I will call more particular attention to this under "Robbing," in the next edition.—ED.]

AN APPEAL TO THE BEE-KEEPERS OF WISCONSIN.

Some of you have seen the report of N. E. France, in GLEANINGS for June 1, regarding the efforts that were made by the Southwestern Wisconsin and the Wisconsin State Bee-keepers' Associations to get the passage of a foul-brood law, providing a foul-brood inspector for Wisconsin. Mr. France expended \$25 in railroad fare and expenses while working to get the bill passed. The bill as you know was lost; but we as bee-keepers feel that we must not give up until we have accomplished our purpose of getting a law for our State similar to the Canadian law. We must have money with which to pay the expenses of Mr. France, and for a fund to provide for future expenses in pushing this matter through the legislature. We therefore appeal to every bee-keeper and supply-dealer in our State, or interested therein, to send contributions for this purpose to N. E. France, treasurer of the Wisconsin State Bee-keepers' Association, Platteville, Wis., on or before Jan. 1, 1896; and if there are any who are absolutely unable to give us financial support we ask you to write a letter to Mr. France, showing your interest and desire to have this law passed, which is of such importance to protect our chosen pursuit.

F. WILCOX,

Pres. Wis. State Bee-keepers' Asso'n.

H. LATHROP.

Sec. Wis. State Bee-keepers' Asso'n.

N. E. FRANCE,

Pres. S. W. Wis. Bee-keepers' Ass'n.

M. M. RICE,

Sec. S. W. Wis. Bee-keepers' Asso'n.

A GOOD REPORT AND A KIND WORD.

Mr. Root:—Our bee season is over; and as it has been a successful one I thought a few lines would not be out of place, so I write you. My bees, spring count, numbered 34; extracted 13,200 lbs. of honey, and increased my apiary to 90. Of course, to some of you old and experienced bee-keepers this may be under the average, in some localities at least. I am only beginning in the business; have handled the frisky little things 15 years, but it does my heart good whenever I hear them humming. I am very much interested in GLEANINGS, also in the hive discussion; also your lean-beef diet. But I think most of your talks on Christ. If he be for us, who can be against us?

San Pasqual, Cal., Nov. 1. J. A. BOYER.

A CORRECTION.

It seems from my article in Nov. 1st GLEANINGS I made an error. It should read, "50 per cent dilute" instead of 5 per cent. This is a warm day. Bees are carrying pollen as in spring.

G. W. MARTIN.

Saltsburgh, Pa., Nov. 5.

OIL OF TAR AS A PREVENTIVE OF BEE-STINGS; HOW APPLIED.

Oil of tar and some light oil like cotton-seed oil, or sweet oil, mixed half and half, is the best, or, at any rate, the most effective, preparation to keep mosquitoes and other insects from annoying man or beast.

Hawk's Park, Fla.

W. S. HART.

[R. A. Grimshaw, of England, some years ago, put out what was known as apifuge. This was a preparation very similar to the oil of tar you refer to—at least, similar in its effects. I used it some; but as our Italians from imported stocks were so very gentle it was of little use. It was evident, though, that the bees disliked it.—ED.]

ARTIFICIALLY RIPENED HONEY; A FINE SAMPLE.

I send by mail a sample of honey which I desire you to test, and also get the opinion of your best experts as to what it is before you give them any information about it.

This honey was taken by me, with an extractor, from old combs in April, 1893, before a cell was capped, and so thin and watery that it was difficult to get the bees from the combs without spilling the honey. It was piped from the extractor into a galvanized-iron tank covered with common muslin, and left standing in the sun a few days, and then drawn off into five-gallon tin cans. The can from which the sample was taken has stood in an upper room, through which the pipe from a cookstove below passes. It was very white when taken, and remained so until a few months ago. I think it got moved too near the stovepipe for summer, and that has darkened it. It has never been candied. Please express opinion of sample. Why wait before extracting for it to get so thick that wired combs will break? I seldom break a comb, and never wire.

I have never had honey to sour, and always get the highest quotations. I have been in the business, in a small way, for over 40 years for myself. One year I had exclusive control of a mountain apiary belonging to another party, from which I secured 40 tons of extracted honey.

DELOS WOOD.

Santa Barbara, Cal., Oct. 24.

[Your sample came duly to hand. The honey is certainly very fine in body, color, and flavor. I never tasted any honey ripened by the bees that was better. I have before tasted artificially ripened honey that I considered the equal of any ripened by the bees. Where one is expert, has the proper appliances, a warm dry room, and a suitable climate, such honey can be made, and is just as good, and, what is of great importance, at a great saving of labor,

both of the bees in capping and of their owner in uncapping. Usually it is better for beginners to let the artificial ripening alone. Our senior editor's first experience was disastrous.—ED.]

ANOTHER BLACK EYE FOR THE "GOLDENS."

Send me by return mail two untested Italian queens. Give us the good old-fashioned sort. I have had all I want of the goldens.

Corunna, Ind.

S. FARRINGTON.



S. S. K., Wis.—Wintering in upground repositories, as double frost-proof buildings, is the same as wintering in cellars. See "Wintering," on page 33 of our catalog; also A B C of Bee Culture.

B. H. G., Kan.—Sorghum molasses can be used for feeding bees, and perhaps will answer all right in your locality; but sugar syrup is far better. If the molasses is very thick, perhaps it had better be thinned with a little hot water before feeding. As you have the molasses on hand we would use it in preference to buying sugar for syrup.

W. H. P., Col.—Replying to your question as to whether sweet clover yields every year, I would say that no honey-plant gives nectar every season. All of them seem to have their off-years. Yet sweet clover, so far as I can remember, yields some honey every year; in fact, it seems to be more regularly visited by the bees every season than any other plant with which I am acquainted. Yes, stock eat it; but they have to learn to like it; and when they once acquire the taste for it they will sometimes browse it down in preference to any thing else. It is a biennial. It springs up the first year, but does not yield honey until the second season, and then is visited by the bees from that time until frost, when it is killed. See fuller particulars in regard to this in the A B C of Bee Culture, under the heading of "Clover."

D. S. G., Col.—The disease called foul brood attacks the larvæ in all stages of growth, and even the young pupæ in the cells of capped brood.

As to the difference between foul brood and chilled brood, the former has a yellowish-brown color and a glue-pot odor. The latter may have that color, but is more often grayish or black. The real distinctive difference is, that the grub dead from foul brood is ropy, while that from chilled brood is not. What I mean by "ropy" is that, when a toothpick is inserted into the

dead mass of an affected cell, the matured matter will adhere to the pick while it is being drawn out slowly, like spittle. The dead matter from chilled brood shows no such thing. The disease that we mention, that resembles foul brood, shows all the characteristics of foul brood with the exception that it is only slightlyropy, and it does not spread from one colony to another, but simply goes off by itself.

J. R. O., Iowa—The teaching of your scientific leader, to the effect that bees lose their instinct for storing honey, and gather only so much as will carry them through rains in certain warm portions of the country, is erroneous. There is a very slight shade of truth in it, but hardly enough to give it a passing notice. The fact is, bees gather two or three times as much honey per colony in hot climates as they do up north where the honey-flow is short and the winter season protracted. Where the honey-flow is continuous the bees will work right on continuously, and wear themselves out only to be replaced by new and younger blood that goes on doing the same thing. I said there was a slight shade of truth in the teachings of your leader. One or two have thought that bees grow a little lazy in the South; but real facts disprove it. Climatic influences, if they have any effect at all, require a much longer time to develop lazy bees. Your leader may be a scientific man; but the knowledge of a practical bee-keeper—yes, thousands of them—on this point, should have vastly more weight than any science he can bring to bear.

A. M., Ohio.—The Salisbury (or Lewis) beef-diet treatment, in brief, is this: First and foremost in importance is the washing-out of the stomach. This is done by drinking a pint of hot water an hour and a half before dinner and supper, half an hour before going to bed, and an hour before breakfast. No liquid food should be taken at any other time unless, perhaps, it is half a cup of tea after eating, and no cold liquid should be taken at any time. The patient usually starts by eating four or five ounces of beef—broiled, not fried or roasted. Mutton is allowed occasionally instead of the beef. To start on, it is better to grind the beef with an Enterprise meat-grinder. After the meat is ground (i.e., run two or three times through the machine), it should be made into a little meat patty, but not compressed, and should be held in the broiler over live coals, a gas or gasoline flame, until it is thoroughly cooked through; but be very careful not to overdo it, as it will make it indigestible. A small piece of toast, about as big as a postal card, dried clear through, is allowed. As soon as the stomach can take care of it, a larger amount of meat is allowed; but care must be taken that you do not overeat at any time. If you can eat eight ounces, or even ten, and feel no inconvenience after it, all right.

For a while you will feel worse, and lose flesh; but if you persistently hold to the diet, in spite of what "good and reputable physicians" say to the contrary, you will come out all right, and your former enthusiasm and love for your work will come back.

The writer experienced just exactly the sensations you speak of; and he knows what he is talking about when he says you will feel better on the above regimen—beef and hot water.

Now in answer to your questions: It is far better to have your meals regularly; but take them irregularly if you can not take them otherwise; but it is absolutely essential that the hot water be taken at the intervals stated (viz., one and a half hours *before meals*), or it will do more harm than good. The "best round steak from the shoulder bone" was a misprint. It was corrected, but probably did not get into the number you had. The round steak should come from the flank. Yes, it is all right to wake up in the night and take a pint of hot water. At any time in the night when you can not sleep it will be found to be beneficial. During the day, drink the amount stated at the proper intervals, whether you *feel like it* or not. As to constipation, the meat diet seems to aggravate it at first, and it is often necessary to take a light physic occasionally, or, better still, wash the bowels out with an injection of warm water. We would strongly urge you to go to Dr. J. M. Lewis, Permanent Block, 176 Euclid Ave., Cleveland, if you wish to get the full benefit of the treatment.

R. H., Col.—If you are troubled with inaction of the bowels while on the beef diet we would advise you to take a mild physic, and a stronger one later on if necessary. The writer has used Park's tea to advantage; but another member of the family much prefers Garfield's, both of which you probably have in your drugstore. The success of the beef diet depends upon keeping the bowels open; but you must be careful or you will have what is known as "scouring," and the bowels may run off too freely, and it will be hard to bring them under control. This is characteristic of the meat diet for the first few weeks: but it does no harm; indeed, you will feel better after it. If you can not get either of the teas above mentioned, get about a pound of senna leaves and put a tablespoonful of them in a cup of hot water, and, when nearly cold, drink about half of it. If that does not produce action, take a little stronger dose next time. Don't get discouraged, but keep on with the diet, and, above all things, keep the bowels clear.

If you would like to have any of your friends see a specimen copy of Gleanings, make known the request on a postal, with the address or addresses, and we will, with pleasure, send them.

CALIFORNIA AS A BEE-KEEPING STATE.
 THE QUESTION CAREFULLY CONSIDERED IN A
 NUTSHELL BY ONE OF CALIFORNIA'S
 EXTENSIVE AND PRACTICAL
 BEE-KEEPERS.

[Althoughm uch has been written setting forth the real status of California bee-keeping, I know of nothing that boils the whole matter down any more carefully, conservatively, and fairly, than the paper read by J. F. McIntyre, of Fillmore, before the farmers' institute that was held in that State recently. From this paper I make a few extracts that I am sure our prospective tourists, or those who entertain an idea of some time making California their home, would do well to read carefully—not because it gives a discouraging view, but because it gives the situation fairly considered on both sides—not by one who has merely visited or been in the State for a short time, but one who has been there for years. Mr. McIntyre says: —Ed.]

I believe that the majority of bee-keepers, in Southern California at least, have their locations fully stocked with bees, and do not care either to buy or sell, or to induce others to bring more bees into their locations, which would overstock them and surely bring disaster to one or both parties occupying such field.

* * * * *

When all the conditions are favorable, California can produce the largest crop of the finest honey in the world, not excepting the famous thyme honey of Hymettus, the clover and basswood honey of the East, or the alfalfa honey of Arizona and Colorado; but during the last twenty years we have had these favorable conditions on an average only once in three years; or, to be more explicit, we have had seven good years, nine in which the bees made from ten to sixty pounds to the hive, and four years in which the bees had to be fed large quantities of honey to keep them from starving to death.

When only the large yields, ranging from 150 to 600 pounds per colony, are reported to the tenderfoot, he naturally grows enthusiastic, and concludes to endure bee-stings for a few seasons, and use the bee business as a stepping-stone to the banking business; but, oh how different in the morning, when he finds that we have such things as dry years, hot winds that destroy the prospects of a honey crop in three days, when he thought success was certain, to say nothing of the three bee-diseases—foul brood, dead brood, and bee-paralysis! and when he does secure the long-looked-for crop, and attempts to dispose of it, he finds the honey-merchant and railroad company waiting for it with low prices and high freight rates. This applies to the sagebrush bee-keeping in the mountains of Southern California.

There is another section of the State, however, which is rapidly coming to the front, as a bee country, and is not affected by dry years or hot winds. I refer to the alfalfa districts of Kern, Tulare, and Kings Counties. A neighbor who sold his bees to me, and moved to that section to engage in the bee business there, is well pleased with the change, and reports a profit of \$12 per colony for this season. Alfalfa honey is amber-colored, and not so fine-flavored as sage honey; but the advantage of making a crop every year more than compensates for the difference in price, which is always higher when the sage-honey crop is a failure.

In the northern half of the State few bees are kept, and a small amount of inferior honey produced; consequently, this section is not worth considering by the man or woman who wishes to make a specialty of bee-keeping.

Compared with eastern bee-keeping, California has some advantages and some disadvantages. Our warm winters enable us to winter our bees without having to carry them into the cellar in the fall and out again in the spring; a larger number of colonies may be kept in one apiary, which saves an immense amount of travel from one apiary to another; the average yield per colony, taking a number of years together, is a little higher—the yield of the Sespe

apiary, which is about an average location, being 7 pounds per colony per annum for twenty years.

Some of the disadvantages are: Lower price of honey, owing to distance from market, and high freight rates; dry years, which often kill more bees by starvation than die of cold in the East; most apiaries are located in the mountains, away from society, schools, and churches, and are lonesome places to live, especially for women, and consequently many bee-men are bachelors.

The disadvantages, however, may be somewhat modified. Bees can and should be fed in dry years in time to keep them from starving to death. The price of honey may be helped out somewhat if the bee-keeper keeps well on his feet financially, and is not obliged to sell as soon as his crop is harvested.

**THE BEE-KEEPERS' CONGRESS AT ATLANTA;
 HOW TO GET THERE, ETC.**

On December 4th and 5th 1895, there will be a general meeting of all the bee-keepers of the United States and Canada at the Cotton States Exposition Grounds, Atlanta, Ga. It is to be hoped that all bee-keepers will make a strong effort to be there from Western New York, Canada, Ohio, and Michigan. Arrange to leave home so you can reach Cincinnati Monday evening and take the Louisville & Nashville Railroad from Cincinnati at 7:30 P. M., reaching Nashville Tuesday morning. From Chicago you can leave at 5 P. M. via the Eastern Illinois, and reach Nashville Tuesday morning; via the other routes, you leave in the morning. From the Northwestern States, arrange to leave home so as to reach Chicago Monday, and Nashville Tuesday morning. From the West, arrange to reach St. Louis and take the Monday-evening train of the Louisville & Nashville Railroad, and reach Nashville Tuesday morning. From Nashville the train will run solid, and be a daylight ride to Atlanta, Ga., passing through all the famous battle-fields from Nashville through Murfreesboro (Stone River battle-field), and for miles in full view of and around the base of Lookout Mountain to Chattanooga, and from there through Ringgold, Dalton, Resaca, Kingston, Kennesaw, Big Shanty, and Marietta, to Atlanta.

Do not forget the route—Louisville & Nashville Railroad: Nashville, Chattanooga & St. Louis Railroad, and the Western & Atlantic Railroad, all coupon tickets. Agents can sell you tickets via the above route. Call on your home ticket-agent for exposition rates, and join the bee-keepers for Atlanta, and be sure your tickets read Louisville & Nashville Railroad to Nashville. For information not obtainable of your home ticket-agent, address Geo. B. Horner, D. P. A., St. Louis, Mo.; J. K. Ridgely, N. W. P. A., Chicago, Ill.; Herman Holmes, T. P. A., Medina, Ohio; Jackson Smith, D. P. A., Cincinnati, Ohio; C. P. Atmore, G. P. A., Louisville, Ky. Send your names to A. I. Root, Medina, O., if you are going, so they will be here November 30. This is also the "Daisy Route" to Florida.

[Doubtless many of our readers have been much interested in the description of the great peach-orchards established by Hale Brothers, near Fort Valley, Houston Co., Ga. If they should make the trip to Atlanta it would be only a little further to visit this great plant, where such wonderful success has been recently achieved in growing the finest peaches ever produced in the State of Georgia. Several numbers of the *Rural New Yorker* during the month of October gave full particulars, with illustrations of this undertaking. Should it be my privilege to meet with the bee-keepers on the days mentioned above, I for one want to

make the trip to Fort Valley. Probably Ernest or myself will be on hand—possibly both. The only trouble will be in keeping us supplied with plenty of beefsteak.



In his usual department in this issue, Doolittle gives some very interesting experiments on feeding back.

As previously announced, this edition numbers 15,000 copies. We shall be printing this number for the rest of the year.

In order to make room in this issue, and still not crowd out the other matter, we add sixteen extra pages, to take in the symposium on wintering.

I TAKE pleasure in introducing to you "Skylark," or, rather, he introduces himself. See his "Pickings by the Way," just after Straws, in this issue. If in his soarsings he "picks" some of us pretty hard—well, just score the editor, and he will try to get even with the lofty bird.

WE regret that the announcement of the next meeting of the California State Bee-keepers' Association did not appear in our columns in due time. In some way the copy was put with Ramble No. 143 (both written by the same person, on the same kind of paper), and we did not come across it till the last Ramble was put in type—too late to do any good. We write this to exonerate the secretary more than ourselves. The meeting takes place on the 18th and 19th of this month.

**THAT EUCALYPTUS HONEY FROM AUSTRALIA
THAT WAS ON EXHIBITION AT THE
WORLD'S FAIR.**

THE following, just received from Dr. Miller, will explain itself:

Dear Editor:—Can any one tell us what became of the fine exhibit of eucalyptus honeys at the World's Fair? One hundred and twenty-six two-pound glass jars of the various kinds were sent by the Hunter River Association from Australia, and the proper commissioner was requested to hand over the entire exhibit to Dr. Riley, to be placed in the museum for permanent exhibition at Washington. Dr. Riley also promised to send an exhibit of U. S. honey to be placed in the Technical Museum of the Australians. Unless very lately done, this promise has never been fulfilled; and in the changing of officers it may have been forgotten. Please tell us what can be done to help keep our credit good with our Australian brethren.

C. C. MILLER.

Marengo, Ill., Nov. 11.

I may explain that the above was called forth by a letter to the doctor, received from the sec-

retary of the Hunter River Association, Mr. R. Patten, asking him in regard to that honey. He had already written the Department of Agriculture at Washington, and also to Mr. Frank Benton, without reply; and now he appeals to the doctor to help him out. We will send a marked copy of this to the Department of Agriculture, Washington, and we hope the proper person will be able to give us the information desired.

BEE-JOURNAL EDITORS AND THE BEEF DIET.

THE editor of the *Canadian Bee Journal*, I regret to say, has been very much "under the weather"—so much so that the two last issues of his journal have been delayed some. But he has (or had up to Oct. 9) gained strength enough to be back at the editorial helm a few hours a day. A year ago, you will remember, I was placed almost in a similar position; but, I am happy to say, thanks to the beef-diet treatment which I am still taking. I am just about out of the woods. I feel better than for years; indeed, I am putting on good solid flesh—anywhere from *one to four pounds a week*—the latter being made during the last 7 days. Besides all this, I feel as if I had a mountain of strength and a big stock of reserve force. I propose to keep right on with the diet until I get a constitution that will not be affected by "weather" or any thing else.

I have been trying to get Bro. Holtermann on the same treatment, and he has partially consented to come and go with me to see Dr. Lewis, of 176 Euclid Ave., Cleveland, O. He is too valuable a man to be laid up thus by the "weather."

By the way, the editor of the *Review* says all the bee-editors have been ailing to a greater or less extent, and it looks as if he were right.

If this thing keeps up I shall be preaching beef diet to all of them. I succeeded in getting A. I. R. on to it, much to his benefit, as you know; and, after my earnest solicitation, F. A. Salisbury, that bee-keeper and supply-man of Syracuse, N. Y., went on to it, and at this writing he has been on the diet some five weeks. Oh, yes! Dr. Miller and family are taking it too.

**VISITORS AT THE HOME OF THE HONEY-BEES;
THE ALFALFA FIELDS OF THE WEST, ETC.**

WE have just had the pleasure of a visit from two prominent bee-keepers—one from the extreme eastern coast, and the other from the far, far away West. Mr. Francis Danzenbaker, of Washington, D. C., called in the interests of the new hive which he has just gotten out. It has a single-story brood-nest, something after the style of his last year's hive, with some little added improvement. The surplus-apartment remains practically the same. But he will have something to say concerning this in *Trade Notes* later on.

Mr. W. K. Ball, of Reno, Nev., came up with a carload of honey—that beautiful alfalfa that is pronounced by every one who tastes it the finest-flavored honey in the world. It is beautifully rich and thick—so thick, indeed, that it is fairly waxy. In answer to my question as to what kind of season he had had, he said it had been rather poor with him for the last two years.

"Rather poor?" said I; "and what was your average?"

"About 150 lbs., extracted."

Neighbor Chase, who stood by, turned to me with a smile, and said that, if he could average 50 lbs., to say nothing of the 100, in good years, he would be satisfied. You see, Mr. Ball depends upon alfalfa that is watered by irrigation. The problem of wet and dry seasons is one that they do not have to contend with. The amount of moisture is regulated artificially by man, and you might almost say the flow of nectar from alfalfa, lasting for three months, is regulated in the same way.

A few years ago Mr. Ball thought the locality could not be overstocked; but in later years a good bee-range there is pretty well stocked with bees already. But there are portions of Colorado (Brush, Morgan Co., for instance), so Mr. Ball tells me, that sell for from twenty to forty dollars an acre, with water, that would do just as well. Here they get three cuttings of alfalfa per season. It is as fine a grain country as he ever saw.

Mr. Ball owns some 300 colonies, and is using exclusively the eight-frame Dovetailed hive containing Hoffman frames. While here I asked him if these frames gave entire satisfaction. He replied that they did. In answer to the question whether he was ever troubled with burr-combs, he said not, provided he kept ahead of the bees. I showed him at the office some self-spacing frames with metal projections; but he shook his head, and said he preferred to have the wood instead.

When I told him there was a sort of demand for a self-spacing frame with metal projections, and something that can be separated a little more easily than the Hoffman, he said he *wanted* his frames to be stuck together so that he could handle his colonies by the hive. He admitted that queen-breeders might prefer a frame that would require no prying.

The super that he uses is the regular Dovetailed containing section-holders. The wide wooden separators and the keying up are features that he valued. As Mr. Ball produces tons and tons of honey every season, sending it east by the carload, his testimony along these points was valuable.

The bees he uses are ordinary leather-colored Italians, and hybrids. He has been trying five-banded bees and Carniolans. The former were too cross, too much inclined to rob, and gather-

ed only about half as much honey as the other bees. The Carniolans were gentle, but swarmed altogether too much.

A VISIT FROM BERT COOK, SON OF PROF. A. J. COOK.

A COUPLE of weeks ago a young man dressed in the garb of a bicyclist was brought up to the office by one of our men, and introduced to the writer as Mr. Cook, of Owosso, Mich. He knew my father quite well, he said, and had taken especial interest in my wheeling-tours among bee-keepers, as reported in these columns. I was busy at the time, but asked him to take a seat, and prepared myself to extend to him the ordinary courtesies of a brother-wheelman. It is true he was introduced to me as "Mr. Cook, from Owosso, Mich.;" but as there are a good many Cooks I thought nothing of it; and in the course of our conversation he made a number of inquiries in regard to A. I. Root, gardening, and especially in regard to potato-growing. I had to confess I knew little or nothing about it, and that he would have to see A. I. R., who, I said, was over home taking supper. He politely excused himself and said he would like to call and see him later if agreeable.

There was a gentlemanly and scholarly bearing about him that impressed me favorably, and I said to myself, "Who can he be?" as he left. So a few minutes afterward I called over to the house and told father there was a potato-man over there who seemed to be well up in the art of potato-growing, and that he knew Terry and himself pretty well, and that his name was Mr. Cook, of Otsego, Mich. "Otsego," said father, "I don't remember of any Cook there." I had got Owosso and Otsego mixed up, and so he did not recognize the identity of the name or locality. An hour or so afterward, he came over to my house, a comical smile playing on his face, remarking, "You are a bright one, you are. That young man you were telling me about was Prof. Cook's son."

"Prof. Cook's son!" said I, surprised.

"Yes, indeed. Come over and see him. We have all been enjoying his company."

"Well," I said, "he could hardly have thought I was extending him ordinary courtesy to let him go off to a hotel for his supper in that way, and he a son of Prof. Cook. I will go over and apologize."

It seems he had told me his father was A. J. Cook; but I presume I did not hear him say so; but I was made to feel that no apology was necessary, for he had had a "real good Dutch supper" at the Germania House.

Mr. Cook, Jr., although a college graduate, and a man of more than ordinary attainments, I should say, thinks farming is none too humble a calling for him. He is at present running a farm belonging to his father, near Owosso, Mich., somewhat after Terry, and he is making a great success of it. He is a warm admirer of

Mr. Terry himself, and after leaving here he was expecting to make him a short call.

He had wheeled it, prior to coming here, all the way from Lansing, Mich., to Columbus, O.; and how much farther south I do not know. But he had already covered several hundred miles during raw, wet, rainy weather. Indeed, one of his runs was made during a heavy rain; and, as he expressed it, he was just as wet as if he had been dipped into a cistern. He caught cold, having no dry clothes to put on after the end of the run, but was recovering from it at the time of his visit at Medina.

He was in a hurry, and could stay with us only over night and a little while during the next forenoon. Before he started off again I could not resist the temptation to catch him with the camera, and the result you see above.



BERT COOK.

As the morning was a little raw, A. I. R. had his overcoat on, with the collar turned up around his neck. Mrs. A. I. R. did not intend to be caught in the picture; but she had come out on the porch to say good-by to Bert, and of course just in time to "get shot." She expressed a wish after the picture was taken that her own figure should be erased. The position of A. I. R. as he stands there is one that is very characteristic and natural when he is outdoors giving directions to his men. His own wheel, you see, leans against the house, in its usual position; for where the wheel is you may be sure A. I. R. is not far off, because he will not nowadays walk even from the house to the factory, a distance of less than 500 feet, as it is so much cheaper and easier to ride. Yes, in going 'cross-lots over the gardens he just simply hops on to the wheel and makes it transport him to every part of the plantation, and he "gets there" too.

N. B.—I obtained Bert's consent to use this picture for print. At first he objected; but

when I told him that the general reading public had a claim on him through his father, he at last consented.

THE LANGSTROTH SYMPOSIUM.

FOR our symposium on Langstroth, notice of which has been before given, we have already received communications, one from Edward Bertrand, editor of *Revue Internationale*, of Nyon, Switzerland; one from C. J. H. Gravenhorst, editor of *Illustrierte Bienenzeitung*, Wilsnack, Germany; and one from W. F. Clarke, former editor of the *American Bee Journal*; Prof. Cook, of Pomona College, Cal., all testifying, without regard to country, their high appreciation of Mr. Langstroth and his services to bee-keepers over the whole world. These and more will appear in the last number of the year.

Since writing the foregoing, I find a very extended and well-written sketch of Mr. Langstroth and his work in the *British Bee Journal* for Oct. 31. Among other things the editor, Mr. Cowan, says: "All readers of Langstroth on the Honey-bee have been charmed by its loftiness of style and the purity of its diction."

"PROFITABLE BEE-KEEPING" is the title of a series of lessons for beginners now running in *Southland Queen*, published by the Jennie Atchley Co., Beeville, Texas. So far as I have examined them they seem to be practical, correct in teaching, and especially adapted to bee-keeping of the South. Indeed, the *Queen* is growing better as it grows older.

By the way, Mrs. Jennie Atchley seems to think I am trying to "sit down on the five-banders, and can't," because I admit that a neighbor finds them to be good workers, and that we have had a couple of good colonies ourselves. As I have said before, I have only given both sides—the good as well as the adverse reports. If the former considerably overbalance the latter, I am sure it is not my fault. If it had been the other way I should have been sounding their praises as loud as any one.

SINCE writing the item in another column regarding sick bee-editors, I am happy to state that Mr. Holtermann is here, and is looking quite well. He says he has gained 11 lbs. As he has a good deal of institute work, necessitating much travel, it will be impossible for him to take diet in the winter; but he is going to take, not tea, but beef with me to-day, cooked *a la* Salisbury.

WE regret to announce the death of Mr. John Huckle, "Secretary of the British Bee-keepers' Association, and for many years connected with the business department of the *British Bee Journal*, who passed away at his home at Kings Langley, Herts, on the afternoon of Friday, Oct. 25."

OUR HOMES.

Brethren, the grace of our Lord Jesus Christ be with your spirit.—**GAL. 6:18.**

Last Sunday evening it was my privilege to listen to a sermon by the Rev. A. T. Reed. It was under the preaching of Bro. Reed, through God's providence, that I was first brought to the light of the gospel of Christ Jesus: and I presume the very tones of his voice will evermore appeal to me in a way that no other voice can or will. Dear friends, where is the good pastor who brought *you* from the darkness of unbelief out into the light? Do not forget him. If he is so far away that you can not go and hear him preach, send him some little reminder of your gratitude and kind memories, say once a year at least. It will do you good, and it will do *him* good. But I must not digress.

Bro. Reed is now an evangelist. He may come into your neighborhood. If so, do not neglect to hear him and give him an encouraging word. I told him at the close of his talk that I was going to take his sermon for one of my Home Papers. It would not be exactly his sermon, after all, because it will be after A. I. Root, although the original thoughts for the most part belong to A. T. Reed.

The subject was grace; but in contrasting it with law, a good part of the sermon might be said to concern *law* as well as *grace*. A young lady once asked him to define grace. He thought a moment, and then replied that the Bible itself gave about the best definition of grace he had ever seen. It is in the 15th chapter of Luke. The younger son became impatient of parental restraint, and begged for his portion, and went away, as you all know, and spent it in riotous living. When his money was all gone, he came home again, as you all know. We do not know how he looked; but probably his face showed the marks of his dissipation and excesses. Very likely, with blood-shot and bloated face, and ragged clothing, he decided to go back to his father. Perhaps he recognizes how kind his father had been, even giving him the money that he did not deserve (and which was not justly his own), to go off and do as he had done. He had come to himself sufficiently to decide that he is no more worthy to be called a son. He is simply going to petition, as one of the hired servants. You know the outcome. The broken-hearted old father saw him when he was yet a great way off, and he did not even wait for him to come up. He ran to him, and broke the boy down completely by falling on his neck and kissing him. The poor wretched son manages to say, in broken sentences, "I am no more worthy to be called thy son." The father does not heed this at all, however. He calls to the attendants who have followed after him, and bids them bring the very best things to be had in the house; they take off his tattered and dirty clothing; give him the *best* robe, put a ring on his hand, and shoes on his feet; then they go and get the fatted calf; "for this my son was dead, and is alive again: he was lost, and is found." Not a word is said about his past delinquencies which he had vainly tried to confess: not a word is said in regard to the probability of his going off again on just such a another "spree." It is all forgotten and *forgiven* in the joy of having back again the one whom he had long mourned for as dead, or worse than dead. This, my friends, is a picture of grace. It is a very good picture indeed of the saving grace of the Lord Jesus Christ and his gospel.

Thousands are ready to say, "This is my religion; this is what I believe in. Gentleness and kindness will save the world." Hold on a little. Let us turn back to the 15th chapter of Numbers. Here we have a little story that is often quoted by those who would ridicule or make sport of the Holy Bible. They say that a man was put to death simply for gathering a few sticks on the sabbath. In fact, we read, in the 36th verse, "All the congregation brought him without the camp, and stoned him with stones, and he died; as the Lord commanded Moses."

You will notice that it ends up by saying, "As the Lord commanded Moses." I confess this passage has always been a hard one for me to understand. At the time of my conversion I was obliged to put it aside, with a good many others of a like character, hoping and trusting that, at some future time, the Lord would see fit to give me light on the subject. Bro. Reed told us this was an example of *law*. A school-teacher finds it necessary to forbid certain things. Some rebellious pupil will often be found who will go straightway and break the rule almost as soon as it is made; then the rest of the school look on and say, "What is the master going to do now?" It is a critical time. What shall the teacher do?

As Mr. Reed was telling the story my mind ran quickly back to the first school I ever taught. When I commenced I believed in grace, and succeeded in gaining the respect and good will of at least the most of my pupils, and they were making excellent progress. Toward the close of the term, however, whispering and talking became so prevalent in that country school that I knew something would have to be done. I talked with my pupils good-naturedly, and plead with them earnestly, and finally, as a last resort, gave notice that, after a certain time, I expected all *communications* during the hours of study would be stopped. A young man of nearly my own age, and my superior in weight and muscle, whispered to his next neighbor almost as soon as I had laid down the rule. I took him to task. He admitted he had broken the rule, and finally told me *then and there* that I was "not man enough" to teach that school, anyhow. The most unpleasant part of it was that he had told the truth. I was obliged to agree with him—at least to this extent: *Before* that, I had not heretofore shown enough *manliness* together with grace and mercy. Boys and girls sometimes grow from childhood to maturity in a very short space of time. In the few minutes I stood before my defiant pupil I made some amazing steps in growth from boyhood to manhood. Of course, a good many of the pupils were on my side; but the whole school was mentally *taking my dimensions*. That young man, I presume, will remember that day to the last day of his life, and I *certainly* shall. I kept on with the school, and by request taught a month longer than the usual winter term. Not only was the whispering stopped from that day forward, but I was a different man, and a *better* man (in many respects) from that time on. I was *forced*, as it were, into a crisis in my life. I hardly need tell you, dear friends, that our whole nation is going through just such experiences almost every day and every hour. If our laws can be held up and enforced by grace and mercy, all right; but if not, then hard, unyielding law, with its iron bands and prison bars, must do the work.

Complaint is often made that parents, teachers, and even officers of the law, punish one offender, while they let another go, when both have committed the same offense. This is

true, and it is right. Suppose a teacher finds it necessary to make a rule, as I have before illustrated. Some defiant boy breaks the rule as soon as it is made. He looks the teacher square in the face, perhaps with a defiant smile. Such a boy is called up, and severely punished. Somebody reports that "Johnnie" also did exactly the same thing. The teacher knows both boys, and their habits and dispositions. Johnnie comes forward, with his poor little face puckered up in agony at the thought of the punishment. He finally bursts out crying, and confesses his fault, at the same time that he also confesses another fault. He was not *listening*, and did not hear what the teacher had said. The teacher replies, perhaps, something like this:

"Johnnie, from what I have known of you I could not for a moment believe it possible that you willfully and *defiantly* disobeyed me. We can all see by your looks and manner that you are sufficiently punished already. You may go to your seat; but for my sake, as well as your own, be careful to *listen* in the future, when your teacher is talking."

In the family circle the father often represents law, while the mother represents grace and mercy. Very likely God intended it should be thus. Both are right and proper. Some boys once accosted another boy, who had had a good bringing-up. Perhaps the conversation was something like this:

"Jimmie, we are going to have some fun tonight. Come and go with us."

"But," says Jimmie, "I have to be at home at 9 o'clock every night, you know."

"Oh! fudge, Jimmie. Who is going to stand about nine o'clock after a boy gets to be as old as you are? You just come along with us this once. Why, we are going to 'paint the town red' to-night. Sooner or later you are going to be a man and judge about these things yourself. Just tell the 'governor,' as I told mine, 'scolding don't hurt none; whipping don't last long! kill me if you dare. I am ready; come ahead.'"

Jimmie should not have stood and listened to such talk, but, like many another boy, I fear he did. I need not tell you all that was said. Most of you know something about it already. The consequence was, he went with the rest of the boys. He did not get back at ten o'clock nor eleven; and then when he did go, the question was, how to meet *law*. He climbed up on top of the woodshed, and then pulled off his boots. You know how it is yourself, most of you. After a long time he got the window up, almost without noise, and felt a little relieved to hear Law snoring loudly. His father was sound asleep. He got into bed without making a bit of noise, or pretty nearly that. But just as he was closing his eyes to go to sleep he was startled by hearing footsteps on the stairway.

"Why, that can not be father," said he to himself, "no, for I still hear him snoring. Oh! it must be mother." And then he decided to pretend he was asleep. She came up to his bedside so carefully that he hardly realized her presence until he felt her gentle kiss on his face; and then, in spite of her, two or three hot teardrops trickled down across his forehead. Not a word was spoken. She went back as she came up. A few nights after, the boys invited him again; but Jimmie shook his head.

"Oh! you catched it from the governor, did you?"

And then they commenced their taunts and jeers. Jimmie evidently did not see fit to tell them his reasons for refusing. Not long after, however, his father died. Then they came after him again.

"Well, Jimmie, the governor is dead and gone now, and you are a man to act for yourself and do as you please. Come out with us, and let's have some more fun."

Jimmie straightened himself up a little. He too had been growing within a few days.

"Boys, do you think I have been at home every night at nine o'clock, during all these months that are past because I *feared* my *father*? You are mistaken. I stayed at home and behaved myself out of respect to my good mother; and now that father is dead and gone, and she is left alone in the world, if it needs the last bit of breath there is in my body, and the last bit of strength I possess to defend her, and avoid hurting her feelings, either directly or indirectly, that breath and that strength shall be freely given, even if it is only a feeble payment of the great debt of gratitude I owe to her for what she has done for me."

That kiss and those teardrops on that memorable night were more potent with Jimmie than any punishment the father had power to inflict. Alas! boys are not all Jimmies.

I have mentioned to you how often in my travels I am called upon to ask a blessing at the table. A great many times the friends say, "Mr. Root, will you say grace?" I believe the word "grace" is more used in the South than it is here at the North. But what a beautiful thought! grace before meals! Let us take an example if you please. A laboring-man comes home to dinner. The poor overworked wife is springing about here and there; in fact, she is sometimes a good deal spryer than a girl of 16, even though she is past 40. The husband says, "Dear me! have we got to wait for dinner now, when I have not a minute to spare?" Then he adds, "Why can't you do something to keep that baby from yelling like that?" Just at this time Johnnie comes home from school, and happens to get in his father's way, and he gives him a cuff. Then Mary does something that a child ought not to do, and she is sent off crying, in a similar way. By this time the wife has hastily got the meat on the table. The father sits down, cuts off a huge chunk, and crams it into his mouth. Dear friends, you can fill out the picture yourselves. If you have not witnessed just such scenes, may be some portions of the story may come home to you.

But we will suppose this man and his wife have been attending the revival meetings. The husband has been converted. He comes home to dinner as before, his work crowding, but he can not sit down as he used to do, for now they say "grace" before meals; yes, and *grace* all through the meal and after the meal. He is tired and hungry, and feels petulant; but he does not give way to it. The baby is crying. In a minute the strong arms of the father have lifted it up. Then the father's strong earnest "grace" and good will have driven away the tears, and the baby is laughing with delight. The wife comes in with the meat as before, and what a change has come over her poor tired self!

"Dear wife, did you ever see a brighter or handsomer baby?"

There are still marks of the teardrops down the baby's cheeks, but he is crowing with delight. Johnnie come in and says he is next to the head at school. "Well done, Johnnie," says the father, and he gives him an approving pat on the head. Then Mary has something pleasant to tell. The children help to bring the chairs to the table, then the father carries the baby with one arm while he helps bring in the things from the kitchen with the other; and finally all are ready to sit around the happy board. Now, I do not know exactly what

sort of a blessing John asks before they commence their meal; but you may be sure there is grace in it, no matter what the words may be. If his saying grace is after my own fashion, his words would probably be something like this:

"O Lord, we thank thee for this pleasant and happy home. We thank thee for these our dear children. We thank thee for health and strength, and for good appetites, and for this our daily food. May it strengthen us that we may be helpful, one to another, and that we may be self-sacrificing; that we may have grace to use our strength so that selfish feelings shall be put down, together with all that is evil; and may we uphold all that is good and noble and pure, for the sake of the dear Master, our Lord and Savior Christ Jesus. Amen."

Some of you may say that all this takes a good deal of time. My friends, it really takes less time than I have been telling it, for all soon learn to help. If the parents set an example before the children, of bearing each other's burdens, when all go to work cheerfully to help things along, instead of hindering, then time is being *saved*. Besides, this very cheerfulness and bright hopefulness helps digestion to such an extent that all will be better fitted for the duties of the afternoon, and more work is accomplished—oh dear me! before supper-time—than if each pushed ahead for self and nothing else, and hardly took time to eat a meal and eat it properly. Of late I have been, by the doctor's orders, taking a full half-hour, or sometimes three-quarters, for each meal, principally because every thing is so thoroughly chewed before it is swallowed, instead of washing down the food with drink at meal-times. Well, I am greatly a gainer, and the time thus taken to say grace before our meals, and to get all the family together "decently and in order," is certainly saved, oftentimes, *many times over*, before the day's duties are done.

A great many people, you know, call the Old Testament "law," and the New Testament "grace;" and some go so far as to keep the one and reject the other. I have given you one illustration of law from the Old Testament. Just read about Ananias and Sapphira in the 5th chapter of Acts, and you will have a striking illustration of the need of *law* as well as *grace*, in the New Testament. It was just in the beginning of the Christian church; at the very outset, hypocrisy, deception, and falsehood had crept in. The very life of the new church depended on prompt and vigorous measures; and this terrible illustration was given us that it might stand through time and eternity as a warning to all who would undertake to make religion a cloak.

It is true that the New Testament is mostly taken up with the coming of the Savior to this world. "For God so loved the world that he gave his only begotten Son;" and it is also true that the message of that only begotten Son was peace on earth, good will to men. As we have it in the first chapter of John, "The only begotten of the Father, full of grace and truth." The Savior's mission was one of grace. While he did not annul the law or do away with it, his work was *particularly* a work of grace. But he fulfilled the law by his mission of mercy and grace. Almost the only time when he used any means that even approached severity was when he took occasion to drive the money-changers out of the temple. The Old Testament is law in one sense; but if we had to deal with law, and law only, we should all be lost, every one of us, for we are all sinners; and it is here that this mission of grace comes in; or as that beautiful hymn expresses it—

Jesus paid it all—all to him I owe; and as I approach this part of my subject a great number of those old familiar hymns well up in a way that seems as if the writers must surely have been inspired when they wrote them. For instance:

Just as I am, without one plea,
But that thy blood was shed for me.

You see the sinner does not depend upon his good deeds nor upon his clean and faultless life. He acknowledges in the outset that there is no hope in that direction. Our only hope is through the blood that was shed, and the grace so freely given for us. And then, again, comes in that old hymn that I used to hear my father sing just as far back as I can remember. He was converted, if I remember rightly, at a revival meeting, and perhaps it was my good fortune to hear some of those hymns of praise welling forth as a spontaneous outburst of a new-born soul:

Oh, to grace how great a debtor
Daily I'm constrained to be!

How many, many times it has occurred to me that my father must have passed through much the same trials I have met—much the same that I am meeting day by day! How wonderfully expressive that word "debtor" comes in! Again:

Let thy goodness, like a fetter,
Bind my wand'ring heart to thee.

We naturally associate the word "fetter" with something disagreeable; but when we think of being fettered by the *goodness* and *grace* of Christ Jesus, then well may we burst forth, "O glorious fitters!"* Once more:

Prone to wander—Lord, I feel it;
Prone to leave the God I love.

I do not know how it is with the rest of you, friends, but these two lines tell the history of my life better than any thing else ever told it. With sadness and sorrow, with humiliation and shame, I acknowledge that I am *still* prone to wander; and what shall be done, not only for me, but for all others like me? Here we have it:

Here's my heart: oh, take and seal it—
Seal it for thy courts above!

That is all we can do; and oh glorious thought! it is all we *have* to do—all we *need* to do. If our hearts are in the Savior's care—if they have been placed in his keeping—if his loving *seal* has made them safe, the work is done, through life and through eternity.

Let me now close with that wonderful verse from the first chapter of John—a verse that, it seems to me, I have never appreciated and understood before as I do now at the close of this talk:

And the Word was made flesh, and dwelt among us (and we beheld his glory, the glory as of the only begotten of the Father), full of grace and truth.

There is a class of people, as you know, who claim that they do not want grace or mercy. All they ask for is *justice*. By the way, it just occurs to me that the friends I meet in the county jail are the ones who oftenest make this claim. I do not know that I have ever heard anybody, however, plainly declare he had never broken any of God's laws—even the best men among us. The most faultless Christian, our leading evangelists, whose lives are *comparatively* clean and unspotted, would not

* You will remember that Jimmie's companions supposed he was fettered by the law of his father. There were fitters, it is true, that kept Jimmie; but they were fitters of grace—his mother's prayers and anxious solicitude. Yes, the tears that were shed when she supposed him to be asleep were the fitters that held his "wandering heart."

dare to claim this. If, then, there is no salvation by clinging to hard, unyielding law, it must come through the grace of Christ Jesus.

For there is no other name under heaven given among men, whereby we must be saved.—ACTS 4:12.



BATTLE CREEK, MICH.

I have heard of people being *half* baked; but I do not know that I ever heard any mention of their being *twice* baked. Huber says the zwieback (*tsweebok*) that our family are all so fond of simply means twice baked—from zwei, two, and backen, to bake. You see, Huber is studying German. Well, this delicious bread, which is getting to be so popular of late, is called zwieback because the bread is baked in the usual way, and then sliced up and baked again; and this last baking should be a slow process, occupying several hours; and to get the best and most wholesome product, not only should every bit of moisture be expelled from the bread slices, but the starch should be mostly converted into dextrine; then the patient, if he is suffering from impaired digestion, should eat it without drinking any liquid whatever. I complained to Dr. Lewis that it took me so long to finish my meal. Said I:

“Doctor, why can’t I moisten it with a little hot water? it takes so eternally long to eat even a little piece if I chew it as you direct, until it is a soft and creamy food; that is, when the juices of the mouth have to furnish a lubricant.”

He replied something as follows:

“That is just exactly what I want you to do. Take plenty of time to eat your meat and zwieback both, to masticate them to completion and mix them with the secretion which nature produces on purpose. We want the digestion to be carried as far as possible while the food is in the mouth, and thus relieve the worn-out or impaired stomach and bowels.”

By the way, it has been suggested that the reason why Carlsbad, Germany, has such a reputation as a health-resort is that the people there subsist mostly on their famous zwieback.

The Battle Creek folks manufacture three kinds—that made from white bread, rye bread, and from whole-wheat flour. Dr. Lewis gives the preference very strongly to the whole-wheat flour. By the way, we have a flour-mill just five miles from here, where they have recently put in an apparatus for making whole-wheat flour. After testing a great many kinds of health foods, I am forced to decide that bread (or, rather, zwieback) made from whole-wheat flour, comes the nearest to beefsteak of any thing I can get. If you are suffering from indigestion, get some of this whole-wheat flour, and have some good bread made, without any sugar or baking-powder. Slice it up, and dry the slices, as I have told you. If you want a sample of the very best, get some of the Battle Creek product. You can get a small sample by mail. May be you will decide, as we have done, to buy it rather than to take the trouble to make it yourself. They buy a special brand of wheat, the best that can be got. It is most carefully cleaned, and then ground with the very best apparatus for making the whole-wheat flour. The bread is then made by machinery of the very best improved kind. All

the kneading and hard work is done by a steam-engine. It is then baked in a coke-furnace that does it just to a dot. Then the loaves are sliced up by appropriate machinery, and baked again by being placed on large trays of netting. These trays revolve slowly so as to be several hours in getting once around; and during these several hours, each tray is exposed to just the right temperature to dry it to the best advantage. The result, instead of the ordinary dry crust, as some might call the zwieback, is a crisp and delicious dry bread that crushes in your mouth like the most delicate crackers or wafers; and one of the nicest things about the zwieback is that it will keep indefinitely if you will only keep it *dry*. If the weather is damp, and you can not keep it in a dry place, give it another baking, say once in several days. In this way it may be kept indefinitely. I understand they ship it clear down to Florida.*

You may be at first inclined to call their food products expensive; but please remember that every particle of moisture is expelled, so you do not pay any thing for *water* as you do in buying canned goods, loaves of bread, fruit, or almost any thing else. Again, the cooking is all done on a large scale by appropriate machinery. If you want to get along in your housekeeping, without a hired girl, or a limited amount of help, using food already cooked, it is a very great saving, especially when it results in saving your wife from laborious housework. Again, it is most wholesome. The same may be said of their delicious grain product called granose. In making this, the very best and nicest choice wheat is steamed and parched, the parching being done with steam as well as the cooking, if I have got it right; and this cooking process is carried on several hours, so as to make every portion of the grain as easy to digest as thorough cooking can make it. Then it is passed through rollers that spread the wheat grains out thin like Saratoga chips on a small scale. Last, it is thoroughly dried, so it will keep like the zwieback, indefinitely. This is a delicious food to eat raw, without any cooking whatever. I have just had a *taste* of it when moistened with milk, and it seemed to me the very embodiment of something both delicious and nutritious. I think Huber agrees with me, by the way in which he manages a bowl of granose and milk. But I am for the present forbidden the use of milk.

There were so many machines and so many

[There are quite a few people who have found that they can not eat oysters; at least, oysters and crackers as usually served do not agree with them. Let all such substitute zwieback for the ordinary oyster-cracker of commerce and note the result. If you think our ordinary crackers are made of good healthy materials, let some of them get old, and see what they smell like; then give zwieback the same treatment. At the usual retail prices I know zwieback costs a little more than the crackers. In our market oyster-crackers retail at 8 cts. while the Battle Creek zwieback is 10. But I think you will agree with me that a pound of the latter contains a good deal more food than a pound of crackers, besides being ever so much more wholesome. Again, if the housewife has plenty of time, and not much to do, she can manufacture the zwieback so it will not cost nearly as much per pound as the crackers. Please remember the best kind of wheat flour costs less than 2 cts. per lb.; and the cost of everything required to make the bread or the zwieback, if you choose, aside from labor, should not be more than 2 cts. Of course, you can buy crackers when there is not time to make bread. But it is a good deal cheaper, and ever so much healthier, to let good home-made bread take the place of crackers in the family; and I think you will agree with me that zwieback, made of whole-wheat flour, is more toothsome, besides being ever so much more healthful.

processes going on in the way of cooking, baking, and drying, that I found myself quite unable to take it all in during my brief stay; and I am just now feeling as if I wanted to go back to Battle Creek and look the thing all over again. But I must not spend all my time in talking about that cooking-factory, even if it is an exceedingly interesting matter to me. At this stage of health I am gaining flesh at the rate of two or three pounds a week, with an appetite all the while for a good deal more than I allow myself to eat. Yes, I have learned, among other things, that overeating *must* be guarded against, even on the diet of pure beef, especially when the patient is allowed also a little zwieback or granose, or something equivalent. The Battle Creek folks have a great printing-establishment. By the way, what do you think of a great building containing 280 printers — yes, *printers* — who neither drink, swear, nor use tobacco? Now, I presume there are quite a few type-setters who read *GLEANINGS*; but they need not feel hurt at what I have said, for I know something of the habits of the average printer, especially in our great cities. Well, these Battle Creek printers not only abstain from all these things I have mentioned, but, if I am correct, they use neither tea nor coffee, and for the most part are probably vegetarians, and eat only two meals a day. What effect did it have on them? Well, I used my eyes in that great dining-room so thoroughly that I did not know but some of the men and women would feel hurt; but even with the vegetarian habits, and with only two meals a day, they were about as healthy, happy, and nice-looking a lot of people as I ever saw in my life. They seemed to have a "right smart" of an appetite for their dinner, between two and three in the afternoon; but I did not think any the less of them for that. It just did me good to see them help themselves to plateful after plateful of the provisions. And I began to wonder to see them all have such vigorous appetites until I remembered they had had nothing since about eight o'clock in the morning, and expected nothing to eat again until the same time the *next* morning. They took plenty of time to eat their food, and there was lots of chatting and good-natured merriment going on. Take it all round, you may find as much fault with the Advent people as you can; but after it is all said and done, you will have to admit that they not only have a model establishment, but that they are a *model people*.

It seems almost out of place for a man of my age, especially after some of my teachings, to say any thing about the good-looking women at the sanitarium; but when I tell you to put particular emphasis on the *good* I think it will be all right. Yes, I think I never saw any handsomer women anywhere in my life. And this calls to mind the fact that not one out of the several hundred employed there wears a *corset*. If I have not told you before my opinion in regard to corsets, you can probably guess what it is. And then, again, if I have made no mistake there was not a woman in that crowd who wore ear-rings or even a *finger-ring*. In fact, I am not sure that they wear jewelry at all. Dear me! if all the jewelry in the United States of America were converted into money, or, better still, if we had had the money before it was ever *invested* in jewelry, there would be no need of the present destitute state of affairs in our mission work in foreign lands, to say nothing of the need of efficient *teachers* in our own America.

There are something like 600 people employed in and about the sanitarium, and there are chapel services twice every day—once in the

morning and once in the afternoon; and the help, I believe, as a rule, are expected to attend at least one of these services every day. A great number of them take part, either in reading the Bible, repeating texts: giving brief experiences, or brief sentence-prayers. It takes a good deal of time. Yes, so it does; but the helpers are *paid* for their time while attending the services, just the same as while at their work, and the management have found it to pay.

Friend Keck gave me some valuable points right here, and yet they are not so *very* wonderful after all. When I suggested that, among such a crowd, there would certainly be some who would be tricky or dishonest, he said they had found by years of past experience that *prevention* is better than *cure*. Whenever any one of their number begins to show a disposition to evade or avoid chapel services, the probability is that he is straying away from the fold, and the right committee is notified to look after him. When this system is carried out, there is almost no such thing as a defaulter or forger. The man is stopped long *before* he gets into the depths of *crime*.

"But these people must be terribly strict," you say. Yes, they are. Before one unites with them, and consents to change his usual Sunday to Saturday, he must have pretty *strong convictions*. It made me think of Gideon's band we had in our Sunday-School lesson recently, as you may remember. Under God's direction, Gideon sorted out the very cream of his great army. The Battle Creek people seem to have sorted out—well, let us say some very faithful, earnest, devoted men and women who are banded to carry on their work.

Although the institution possesses immense wealth, its *members* can not get rich very fast. They all work on small salaries. For instance, the nurses, of which there are several hundred, get only five or six dollars a week; but if they go out through the city of Battle Creek and elsewhere to take care of patients, they get from ten to twenty dollars a week. The profit goes to build up the sanitarium. But this sanitarium has never paid any dividends, and never *expects* to pay any. Money, labor, and every thing else, is for the glory of God—at least, this is the way I got it from friend Keck; and if I am wrong, somebody who reads *GLEANINGS* can doubtless set me right in regard to it.

To be Continued.

DOCTORING WITHOUT MEDICINE.

HOW TO MAKE THE MOST DELICIOUS AND
TOOTHSOME PIES, AND PIES THAT
HELP DIGESTION INSTEAD OF
IMPAIRING IT.

Through all the long weeks and months of my pure-beef-diet experience, perhaps I have longed for apple-pie more than for any other one thing. Sometimes I could actually have gone away and cried because I could not have any, especially when Mrs. Root brought forth some of her own making, with their brown, crisp, flaky crust and appetizing flavor. The doctor, however, was inexorable. He said it was a depraved appetite that was calling for the very thing that had got me into my past troubles. I knew he was right, because I found by many trials that a piece of pie after dinner, was what upset me entirely, especially if I partook of the rich and greasy pies so often found, when one is away from home. Well, now, for my discovery. At the present time I am eating about 12 ounces of sirloin steak at each meal,

with greater appetite and zest than I ever ate any thing before in my life, I verily do believe. Of late I am allowed with this meat diet say about one ounce of zwieback, such as I have described; and, by the way, one ounce, if it is made right, is a pretty good slice of bread. I am also allowed a piece of butter about as large as will lie on a teaspoon without heaping it up very much; and for the past few weeks the doctor has permitted me to make some explorations in the line of testing different kinds of vegetable food. For instance, when I insisted that I could digest corn-meal mush when thoroughly cooked a long while, he told me to try it—eat a small sauce-dishful for breakfast only—not any other vegetable food during the day. The one experiment satisfied me that the doctor was right. Corn meal is by no means the grain to choose, if you want one easy of digestion. Bread made from whole-wheat flour is ever so much better, but the zwieback is still better. Rice, when cooked a long while, is perhaps as easy of digestion as any thing else unless it is the zwieback. Some of the patients eat green peas, without trouble—that is, when the peas first begin to ripen, and none are old and hard. The green peas did not do for me at all. They were even worse than the corn meal. I need not tell you of other experiments made; but my final conclusion was that the doctor knew his business, and had a better knowledge of my particular case than I had myself.*

I have always had a great fondness for baked apples; but the doctor felt pretty sure I had not got to the point yet where I could manage them, and one or two tests showed me he was right. A few days ago, however, it occurred to me that a little baked apple, or plain applesauce without sugar, would go well with my granose, and not do harm. Mrs. Root made some plain sauce for me out of rambo apples, cooking

*Perhaps I had better acknowledge right here that I have had an attack of my chills since I have been on the meat diet. After I had been experimenting on corn meal, green peas, and baked apples, it happened I was called to a church conference in a remote part of our county. It was in a small town where there was neither hotel nor meat-market. I did not discover this until just at meal-time, after a prolonged afternoon session. I thought I would ask one of the waiters to get me some meat of some kind; but there was a greater crowd to dinner than they expected, and everybody was hurried and worried; so for once I ate a promiscuous dinner of chicken-pie, soft fresh biscuits, cookies, etc. There did not seem to be any help for it unless I intruded my "peculiar notions" (as people might call them), and so I submitted. The next morning I had sore throat; then I was called away from home again, ate two more "regular meals," and got my digestive apparatus completely out of tune, took one of my old severe colds, had to be bundled up with fur cap and overcoat, and finally became so hoarse a part of one afternoon that I could not speak a word, and for the first time in my life I had to write on a piece of paper what I wanted to say. Nobody could read my hasty writing (not even Mrs. Root herself), and I tell you I was in real trouble. Sick, sore, weary, cold and chilly, I could not speak a word. I finally decided to go back to the doctor and confess my shortcomings. He said it was just what I might have expected, and that it was entirely the result of my backsliding and getting away from my regular meals and habits. But he finally told me to "be of good cheer;" for if I would get right back to clean ground meat, and nothing else, for four or five days, all would be straight. At the diet-house Mrs. Ferguson gave me new courage by saying she had seen the doctor get his patients out of similar troubles again and again. "Why," said she, "he just 'cleans the cold right out of them' by his doses of hot water, and strict meat diet, and they are all right again in two or three days." It took me about a week to get back into the straight path from which I had strayed away, and it left me perhaps a little sadder, and I trust a little wiser, for my experience.

them several hours. About as much of this sauce as one ordinarily gets in a piece of applepie was given to me in a saucer. Instead of putting my spoonful of butter on the meat I spread it over the warm apple-sauce. Then I sifted on about half an ounce of granose. An ounce of granose makes a great heaping saucerful, as you will notice if you try it. Well, this made my delicious pie. The butter furnishes the shortening, and the granose the crust. Surely there was never made by housewife or anybody else a more crisp, flaky, toothsome, and delicious pie-crust than the granose formed. With my spoon I mashed it down into the melted butter and sauce. I have now eaten a similar dish perhaps half a dozen times, and it agrees with me to perfection. The other half-ounce of my granose is sprinkled in the gravy, with my sirloin steak: and if the combined culinary art can get up a more delicious meal—that is, from my point of view—I have never yet found it—meat, fruit, and grain combined. If your apples are made into sauce, without sugar, they preserve the distinctive flavor of each variety; and the fact that I can now eat the different apples that are talked about, in the way I have described, and enjoy them as I never enjoyed them before, fills me with gratitude and thanksgiving.

Yesterday afternoon, when I awoke from my nap, almost before consciousness was fully restored, the thought came into my mind—"Praise God, from whom all blessings flow;" and I greatly enjoyed singing it out loud; and not only the words but the sentiment welled up from the bottom of my heart.

Some of Dr. Miller's friends felt troubled because I got down to 110 lbs.; so they will feel glad to know that to-day Nov. 9, I have got up to 117½ lbs., and I feel happy, strong, and well, every hour of the 24, and especially the half-hour or fifteen minutes before dinner-time.*

The gluten mush I spoke of in the last issue is tiptop; but it is a very powerful and concentrated food, and does not seem to answer for every meal quite as well as the zwieback. All these things, however, are nice for a change.



FORTY POTATOES OF THE CRAIG SEEDLING.

Above we give you the picture mentioned in our last issue. The Craig potato is remarkably fine-shaped, a flattened oval, with eyes very nearly level, so that it is easy to pare; no knobs

* To-day, Nov. 13, I have got up to 121½ lbs.

nor projections; almost always of large size. Outside it is a little on the reddish line; but when cooked it is almost white—a little yellowish white, perhaps. While the quality is not equal to the Freeman, it is fully as good as any of the large strong-growing potatoes. I have never myself seen any of them where the vines died before they were killed by frost; consequently none of ours, very likely, gave us as fine a quality of potatoes as where they ripened up of their own accord. Possibly our plan of heavy mulching with coarse manure has much to do with keeping them growing as they do; but I shall, at least so long as I have such good success, hold fast to the mulching plan. Just think of it! the most of the work is done before your potatoes are planted. Before they are quite out of the ground we go over them with the smoothing-harrow, and we use this harrow again after they are up just a little. If the weather is favorable, then we use the Breed's weeder; and by the time they have been cultivated, say two or three times with the Planet or Iron Age cultivators having a good many fine teeth, the tops begin to cover the ground so they are ready for the mulch. We have them planted such a distance apart that the horses and wagon straddle the rows. One man pitches off the coarse manure while another pitches it under the foliage or between the hills. If you have a pretty good soaking rain after you get this mulch in place, your potatoes are pretty sure to be safe so far as drouth is concerned. If rank weeds push through the mulching, pull them out by hand. Our experience is, however, that with the Craig potato, the vines soon cover the ground so thoroughly but little care or tending is required after you put on the mulching.

Several who have reported speak of the missing hills; and I am forced to conclude this may be a fault with the potato. Next spring, however, we are going to try to have every eye started before it is planted; that is, we will plant no pieces until the eyes have started sufficiently to make it pretty certain, and then we shall have a full stand. Here is a report from away down in Missouri:

FORTY-SIX POUNDS OF POTATOES FROM ONE POUND PLANTED.

The two pounds of Craig potatoes I bought of you last spring were cut to one-eye pieces; planted when I planted early potatoes; vines very rank, but dead before frost. Yield, 92 lbs. of fine large potatoes, the best I raised this year. My Freemans did not come up to my expectations.

JOHN GEARHART.

Princeton, Mo., Nov. 6.

Yes, friends, we know the Freeman ordinarily does not give the great yield that many other potatoes do; but for the present, in our family, the Freeman leads them all in quality. We had some baked for breakfast this morning. Several other kinds were put in so as to compare them with the Freeman. If you want a baked potato to be nice, you must be on hand when they are just ready to come out of the oven. The Freemans would break open with the contents so dry and floury they would almost shake out of the peeling.

AT THE RATE OF 120 POUNDS FROM 1 POUND PLANTED.

Last spring I received by mail from you one-fourth pound of Craig potatoes. They were cut to single eyes, making 14, which were planted one in a hill, in moderately strong garden soil. The tops died down two or three weeks before frost, and I dug 30 pounds of them. I don't know much about how potatoes

ought to yield, but it strikes me that raising potatoes at the rate of 120 pounds to 1 planted is doing pretty well. They were nearly all of good size, but only one of them weighed a pound.

Orlin, Mo., Oct. 28. D. B. THOMAS.

Well, well, friend T., your report, it seems to me, beats every thing heretofore; at the rate of 120 lbs., from one pound planted, it is away ahead of even Manle's Thoroughbred. But yours had a whole season to grow in, or nearly the whole, as it is a late potato; and probably you took a little more pains than the ordinary field culture given the Thoroughbreds by friend Terry.

I bought one pound of Craigs of you last spring. I cut them one eye on a piece, and put two pieces in a hill, making 18 hills all told. Only about half of them started. I think they had been frosted, as they were black, more or less on the inside. Have you had any complaint on that score? I dug them a few days ago—just 40 lbs. of old whoppers. I tell you—no small ones at all, only in one hill, where there was a dozen or more from the size of a pea to that of a hickorynut. The bugs ate them some, and they blighted, but not as bad as other varieties all around them. Maggie Murphy is very similar in color and shape, but earlier, and blighted the worst of any, and is not quite as large. There was no sign of any scab on the Craigs.

E. MANNING.

Jacksonville, N. Y., Oct. 21.



The Sir William potato, advertised in this issue, is a very nice table potato, in addition to its many other good qualities. I had a bite of a large nice one this morning, so that I know whereof I speak.

In giving the price of granola, in our last issue, it was, by mistake, put at 20 cts., when it should have been 10 cts. in bulk or 12 cts. in 1-lb. cartons, and whole-wheat wafers should be 12 cts. per lb., instead of 20 cts.

EARLY OHIO POTATOES.—ANOTHER LOT.

For several weeks we have been sold out of Early Ohios, but have just now secured a fine lot of about 200 bushels. We can now furnish them, both firsts and seconds, as heretofore advertised; namely, \$1.50 per barrel of 11 pecks for firsts; 75 cts. per barrel for seconds, so long as the seconds hold out.

MAULE'S NEW EARLY THOROUGHBRED POTATO UNDER GLASS.

On page 819 I told you we had received a pound of the above by mail. The pound consisted of three medium-sized potatoes. A half of one of them was cooked as a sample. The rest were cut to one eye, and planted 7 inches apart in our best lettuce-greenhouse across the way. Exhaust steam was turned under the bed so as to give bottom heat; and to-day, just 20 days after they were put in the ground, we are delighted to find they are sprouting nicely. Two of them have already burst through the ground. The $2\frac{1}{2}$ potatoes made just 28 eyes. Now, then, we are going to see what can be done in the way of raising potatoes under glass, started the latter part of October. We propose to move them further apart as fast as they get crowded.

I am very sorry that quite a few have understood that we give a pound of these potatoes for renewing your subscription instead of sending us a new subscription. My object in making this big offer was to get GLEANINGS into families or localities where it has not been before; and our five barrels of potatoes that cost us so much money would be gone in no time if we gave a dollar's worth of potatoes to every one who renews for 1896. We stand quite